FEDERAL ON-SCENE COORDINATOR'S

REPORT

for

ALIQUIPPA TIN MILL SITE

ALIQUIPPA, BEAVER COUNTY, PENNSYLVANIA

May 27, 2017 to June 30, 2020

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION III
WHEELING, WEST VIRGINIA

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ACRONYM LIST

Acronym	Definition
AORR	Aliquippa and Ohio River Railroad
BGS	Below Ground Surface
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
EPA	Unites State Environmental Protection Agency
ERRS	Emergency and Rapid Response Services
FPN	Federal Pollution Number
FWPCA	Fresh Water Pollution Control Act
HDPE	High Density Polyethylene
MSL	Marine Safety Lab
NCP	National Contingency Plan
NPFC	National Pollution Fund Center
NRC	National Response Center
OPA 90	Oil Pollution Act of 1990
OSC	On-Scene Coordinator
PADEP	Pennsylvania Department of Environmental Protection
PBFC	Pennsylvania Fish & Boat Commission
PENNDOT	Pennsylvania Department of Transportation
POLREP	Pollution Report
PRFA	Pollution Request Funding Authorization
PRP	Potentially Responsible Party
RM	Response Manager
SAO	Site Administrative Officer
QA/QC	Quality Assurance/Quality Control
START	Superfund Technical Assistance and Response Team
T&D	Transportation & Disposal
USCG	United States Coast Guard
USFW	United States Fish & Wildlife Service

1.0 PURPOSE OF THE ON-SCENE COORDINATOR'S REPORT

The purpose of this report is to describe the situation and events surrounding the response actions conducted at the Aliquippa Tin Mill Site (Site) located in Aliquippa, Beaver County, Pennsylvania. The U.S. Environmental Protection Agency (EPA) On-Scene Coordinator (OSC), Deborah Lindsey, made the decision to prepare this report in order to provide documentation of activities conducted during the response actions at the Site.

Response actions, initiated by the Pennsylvania Department of Environmental Protection (PADEP) and then transitioned to the EPA, were in response to a discharge and the continued substantial threat of additional discharge of heavy fuel oil into the waters and adjoining shoreline of the Ohio River, navigable waters of the United States. The discharge of an unknown quantity of a heavy fuel oil was coming from a 36-inch outfall leading from the former Aliquippa Tin Mill property near mile marker 18 on the Ohio River.

The OSC determined that the Site met the criteria for response actions pursuant to Section 31l(c) of the Federal Water Pollution Control Act (FWPCA), as amended by the Clean Water Act §311, as amended by the Oil Pollution Act of 1990 (OPA), Public Law 101-380, and in accordance with the National Oil and Hazardous Substances Contingency Plan (NCP).

2.0 SUMMARY FACT SHEET

Site:	Aliquippa Tin Mill Site
Location:	Woodlawn Road and Steel Street (611 Woodlawn Road) Aliquippa, Beaver County, Pennsylvania 15001
Size:	Total property area: approximately 76 acres Remediated area: approximately 0.15 acres (surface) and 400 feet of riverbank
Current Owner:	Betters Real Estate Holdings L.P. Aliquippa Tin Mill, L.P.
Site Status:	Industrial Zoning
Funding Approval:	June 28, 2017 – FPN #E17309 obtained July 19, 2018 – costs to conduct cleanup authorized
Response Period:	May 27, 2017 – June 30, 2020

Project Description/ Response Activities:

A discharge of heavy fuel oil from an outfall into the Ohio River was initially discovered on May 27, 2017 by the Pennsylvania Fish & Boat Commission. The Pennsylvania Department of Environmental Protection (PADEP) responded to the spill and activated their Emergency Response contractor to install and maintain containment boom and absorbent materials along the contaminated riverbank to reduce and prevent migration of oil into the Ohio River. The EPA On-Scene Coordinator (OSC) supported the PADEP's defensive actions and obtained funding through the USCG National Pollution Fund Center (NPFC) to be used for mitigation efforts. PADEP continued defensive actions while conducting investigations to locate a source of oil and work with the Property Owner. In January 2018, the investigation and mitigation efforts were transitioned over to EPA as the lead agency.

EPA continued booming operations to contain the oil while conducting limited removal of the oil from the river and riverbank areas while continuing to look for the source of the oil. Investigations showed that the oil was entering a stormwater conveyance system that had been installed on former Aliquippa Tin Mill property as part of redevelopment. The stormwater system acted as conduit for the oil to be directly discharged from the outfall into the Ohio River. In April 2018, EPA identified at least two potential sources and requested funding to initiate response actions to stop the on-going release of oil into the Ohio River. EPA worked with the NPFC regarding enforcement notifications while continuing to conduct defensive actions. In August 2018, NPFC approved the funding and EPA coordinated access from the Property Owner.

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Between October through December 2018, EPA conducted removal response actions which replaced approximately 280 feet of the storm water piping and cleaned residual oil from the additional 1300 feet of the stormwater system which stopped the discharge of oil into the Ohio River. A discreet source of oil was not uncovered. Residual oil most likely from historical operations was observed while excavating to replace the stormwater piping and believed to be the source of oil.

EPA continued to monitor the outfall while preparing to resume operations to clean the contaminated riverbank. After receiving access from the Genessee & Wyoming Railroad to cross the Aliquippa & Ohio River rail line, EPA mobilized back to the Site in September 2019 to complete the cleanup of the riverbank. EPA manually removed approximately 36 tons of oil-contaminated vegetation, rocks and sediment along 390 feet of impacted riverbank. From November 2019 through June 2020, EPA maintained boom along the riverbank and monitored the outfall and riverbank for any additional sheening. There was no oil or sheening observed and the boom was removed in June 2020.

Threat Present: Discharge of heavy fuel oil, similar to No. 6 fuel oil, into the Ohio River, navigable waters of the United States.

Quantity Removed: Oil Contaminated Soils (non-hazardous waste): 2,831.04 tons
Oil Contaminated Debris (non-hazardous waste): 49.68 tons

OSC: Deborah Lindsey

START Contractor: Weston Solutions (Weston), West Chester, PA. (2/2018 – 12/2018)
TechLaw, Inc., (TechLaw) Wheeling, WV. (8/2019 – 6/2020)

Removal Contractor: Environmental Restoration LLC (ER) Fenton, MO

Disposal Locations: Max Environmental Bulger Facility, Bulger, PA. (oil-contaminated soils)
WM American Landfill, Waynesburg, OH. (oil-contaminated debris)

Project Ceiling: $2,471,834.00

Project Costs: $1,511,474.00 (extramural costs)

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Deborah Lindsey
Federal On-Scene Coordinator
USEPA Region 3

3.0 SUMMARY OF INCIDENT

3.1 Site Location and Description

The Site consists of a discharge and the continued substantial threat of additional discharge of heavy fuel oil into the waters and adjoining shoreline of the Ohio River, navigable waters of the United States. The location of the oil discharge noticed herein is from a discharge of an unknown quantity of what appears to be Number 6 Fuel Oil from a 36-inch outfall leading from the former Aliquippa Tin Mill property.

The former J&L Aliquippa Works Tin Mill facility is located in Aliquippa, Beaver County, PA. The property is approximately 78 acres in size with an estimated 3,800 feet of waterfront on the Ohio River. Oil was observed discharging from a 36-inch outfall into the Ohio River and has coated the adjacent shoreline for several hundred feet. A demarcation of oil contamination was observed on the bank which tapered from a few inches on the ends to approximately six feet in the middle. Aliquippa Works, a steel manufacturer facility, operated at the Site from 1906 through the 1980's with the Aliquippa Tin Mill continuing through 2000. The steel mill was dismantled/demolished after operations ceased. The property has been cleared, graded and all the infrastructure put in place for redevelopment. The property was cleaned up under Pennsylvania's Act 2 regulations and a storm water conveyance system installed around the perimeter of the property to redirect surface water runoff from the upgradient rail line and local highway around the property which then discharges out through the outfall.

The physical location of the former Aliquippa Tin Mill Site begins at the corner of Woodlawn Road and Steel Street in Aliquippa, Beaver County, PA (Parcel 08-05-0101-011). The outfall is located on the bank of the Ohio River at approximately river mile marker 18 near the Ambridge-Aliquippa Bridge. The approximate position of the outfall is 40.6071866 north latitude and -80.2372549 west longitude (Figure 1 - Site Location Map).

3.2 Description of Threat

A significant discharge of oil from an outfall located on the Ohio River was reported on or about May 27, 2017. Pennsylvania Department of Environmental Protection (PADEP) Emergency Response personnel investigated and documented a large volume of heavy oil, similar in appearance to Number 6 Fuel Oil, was observed coating the bank of the Ohio River for several hundred feet. A demarcation of oil contamination was observed on the bank which tapered from a few inches on the ends to approximately six feet in the middle. A dark oil sheen containing globs of heavy oil extended out approximately 20 feet from the bank. PADEP personnel observed an outfall pipe with heavy oil residue coating the bottom 12 inches of the outfall pipe. The amount of discharge was not certain, but oil globules and sheening continued to discharge from the outfall pipe. As of January 2018, the amount of oil being discharged from the outfall has increased. There is a significant amount of oil being collected from inside the storm drain leading to the outfall as well as being contained behind the containment and absorbent booming being managed on-site.

3.3 Initial Situation

On the evening of May 27, 2017, PADEP Emergency Response personnel investigated and documented a large volume of heavy oil observed coating the bank of the Ohio River for several hundred feet. Shoreline conditions and nightfall precluded the PADEP from conducting a full assessment. PADEP utilized their emergency contracting authority to hire a cleanup contractor to implement defensive actions to contain the oil while conducting efforts to identify the source and responsible party.

PADEP returned on May 28, 2017 to conduct further investigations to locate the source of the oil. The former Aliquippa Tin Mill property showed no visible source of the oil. The property has been cleared and graded and is a empty parcel. A storm drain system was located on the perimeter of the property. A few of the catch basins did show signs of oil including a visible sheen and fuel odors. PADEP also investigated around the outside of adjacent properties for signs of oil spills or discharges. No visible sources were identified outside on the properties.

On June 3, 2018, EPA's FOSC conducted a preliminary assessment with the PADEP. The FOSC observed sheening and oil globules along the shoreline and additional sheening coming from the outfall. The PADEP identified oil sheening in storm drains leading to the outfall. Given the observation of oil continuing to exit the outfall pipe and confirmation from analytical results that the material was an oil, the FOSC determined it appropriate to request funding from the National Pollution Fund Center and issue a PRFA to cover future costs to ensure an effective removal of the discharge or mitigation or prevention of a substantial threat of discharge.

In July 2017, PADEP coordinated a camera survey of the storm drain system to assess where oil may be where infiltrating the piping. The camera inspection showed oil infiltrating into the storm drain system in four locations on the northern end of the property. Since the property has been cleared and graded, it is believed that there is an underground source associated with historic operations at the Site.

Between June 2017 through November 2017, PADEP continued to maintain absorbent and containment boom at the outfall and along the contaminated shoreline to prevent further migration of oil into the Ohio river while pursuing enforcement actions on the current property owner.

In December 2017, the property owner voluntarily took over booming operations and excavated two test pits near the storm drain where oil was detected during the camera survey. One of the test pits showed four underground pipes crossing over the storm drain. The pipes had been cut and bent slightly upward and crimped. Water and oil were observed coming out of the piping. Contaminated soil was encountered from the cut piping down to the storm drain located at depth of 20 feet. The test pit began filling with oil and water.

In January 2018, PADEP transferred lead to EPA to conduct defensive actions, investigations and cleanup of the oil.

EPA took over defensive action at the beginning of February while conducting a historical background review of the property. A 1975 mylar drawing was obtained of the facility which showed two aboveground storage tanks located on the northern end of the property where the oil has been observed entering into the storm drain piping. Discussions with a local contractor reported that LTV Steel routinely off-loaded No. 6 fuel oil from barges.

An underground utility survey of the northern corner of the property identified piping at approx. 3-4 feet below ground surface. The piping was traced going both north and south from the storm drain test pit location and the survey did show where the lines may end. Based on the survey, EPA calculates that there could be approximately 1000 feet of underground piping which could contain 1000 to 1500 gallons of material. The survey also identified a rectangle/ oval anomaly directly south of the test pit location near the underground piping. At this time, EPA is not sure if the anomaly is fill material or some type of tank or underground structure.

Since the beginning of February 2018, EPA has been conducting defensive actions at the outfall. An increased amount of oil is being observed coming from the outfall during booming operations. Oil containment measures inside the storm drain at a few of inlets also shows an increase in oil.

3.4 EPA Response Action (2018 – 2020)

3.4.1 Narrative of Events

This section summarizes the three phases of work that were completed at the Site as proposed in the OPA 90 work plan and in conjunction with the Access Agreement with the Property Owner. The summary of work is not in chronological order. Section 3.4.2 details the specific actions completed on-site in a chronological order.

<u>Phase 1 – Storm Water Conveyance System and Underground Piping</u>

The initial scope of work proposed the removal of approximately 1000-1500 feet of underground piping and any oil contained within, investigation of a 400 sq ft anomaly at the end of one sections of piping, removal of oil contaminated soils in the area of the cut piping and where oil was observed entering into the storm drain system, removal and replacement of approximately 500 feet of impacted sections of 48-inch storm water conveyance system and proper disposition of oil-contaminated soil and debris generated by the removal activities. The work would take place in the north western end of the property where oil was observed entering the storm water conveyance system.

The work under Phase 1 focused on the north west area of the property where oil was observed infiltrating into the storm water conveyance system and where the sheared underground piping was discovered during the December 2017 test pits. This area is bordered by Woodlawn Road to the west, Steel Street to the north and an active material lay down area operated by a tenant of the Property Owner to the south. A permanent fence separated the tenant's property from the cleanup area.

EPA began excavations in the area of the December 2017 test pits to try and locate a discreet source of oil which was believed to be entering the stormwater conveyance system. EPA did not locate one discreet source in the excavated area. Instead, excavation in the area of the test pits discovered many oil seeps, oil lenses and pockets of oil contamination throughout the vertical profile both on the north and south sides of the stormwater piping. Groundwater was not visually impacted when encountered. Oil was observed seeping down the sidewall into the excavations and impacting the groundwater. Heavy dark oil and sheening eventually covered the groundwater that had filled the open excavation. Based on the observations during excavation, it was determined that the oil entering the storm water piping is from historical releases that are contained subsurface and seeping into the groundwater when a pathway is formed. The storm water conveyance system is acting as a conduit for the oil to enter the Ohio River. Without a discreet source of oil to remove, it was determined the most effective mitigation efforts were to replace the metal storm water piping between inlet #7 and inlet #8 with HDPE piping and seal off any oil seeps from entering this section of the storm water conveyance system.

Excavation and replacement of the storm water piping began on or about October 23, 2018. The first sections replaced started at 60 feet east of inlet #8. There was no observed oil in the first 60 feet of the storm water piping based on the camera survey and there is a sanitary sewer line and high-pressure water line running above the first 60 feet of storm water piping. Excavation activities showed the first sections of piping that were scheduled to be replaced (60 ft to 120 ft from inlet #8) had the most oil seeping into the groundwater and into the storm water piping. The first 60 feet of piping replaced was also encapsulated with a flowable concrete fill to seal off the sidewalls of the excavation where the oil was observed seeping and to ensure that oil could not infiltrate the pipes. After replacing the first 60 feet of piping with the flowable fill, the amount of oil being discharged at the outfall decreased significantly. ERRS continued with the excavation of the existing metal piping and replacement with the HDPE piping in an eastern direction. Fifteen 20-foot sections for a total of 300 feet of HDPE pipe were replaced between inlet #7 and #8. The excavation area was backfilled, compacted and graded.

The initial proposal of work under this Phase also included the removal of approximately 1000-1500 feet of underground piping and any oil contained within, investigation of a 400 sq ft anomaly at the end of one sections of piping, removal of oil contaminated soils in the area of the cut piping. Excavations in the work area did uncover 4 lines of nestled underground piping that ran in a north-south direction. Initial reports stated that the diameter of the piping was believed to be 6-8 inches. It was determined once the piping was uncovered that the diameter was 4-inch piping. The area around the nestled piping running north of the work area was excavated and the underground piping was cut back 25 feet. Heavily stained soil was observed in and around the nestled piping. As the weather warmed up, oil was visibly seeping from the area around and underneath the cut pipes. Contamination below the nestled pipes did not extend vertically for the full 20 feet. There was an estimated 6-foot section of soil which visibly appeared nonimpacted below the contaminated soils under the nestled piping. Contaminated soil around the nestled piping was excavated and taken off-site for disposal. Samples collected from inside the piping were sent out for fingerprint analysis and results showed they were not a match for the oil coming out of the outfall and into the Ohio River. A second magnetometer survey showed the piping extending approximately 1000 feet behind the businesses on Steel Street with no indication on where the lines may end. Cleaning out of the lines could not be completed in

December 2018 due to the cold weather and the viscosity of the material. In the Fall of 2019 when EPA returned to clean-up the impacted riverbank, work included plans to address material inside the underground piping. Discussions with vendors identified many obstacles with cleaning out the piping and although they agreed to try and remove the oil, there was no guarantee that the operation would be successful. EPA then decided to close the piping in place. Each pipe was opened up and hydraulic cement was placed inside the pipe to fill approximately 12 inches vertically within the 4-inch diameter pipe. The temporary plugs were placed back on each of the pipe as an additional measure. After plugging all four pipes, the hole was backfilled with the crush-n-run gravel, compacted and brought to grade.

The underground piping on the south side of the work area was not located during the excavation activities. EPA believes that the cut end of the piping fell inside the fence line where the property was being used by a tenant. EPA could not complete any work to investigate the underground piping extending south of the stormwater system or the 400 square foot anomaly identified from the magnetometer survey.

<u>Phase 2 – Storm Water Conveyance System from Inlet #7 to Outfall</u>

The initial scope of work in the OPA 90 workplan included the evaluation of approximately 1200 feet of 48-inch storm drainpipe to determine the extent of contamination within the storm drainpipe and any associated contamination outside the storm drain system. Removal and replace impacted sections of the 48-inch storm drainpipe as necessary. Proper disposition of oil-contaminated soil and materials generated by the removal activities.

A camera survey conducted inside the entire length of storm water conveyance system in October 2018 did not show oil infiltrating the stormwater system from inlet #7 to the outfall. A few locations showed infiltration of groundwater. A decision was made not to replace the remaining 1300 feet of storm water piping. The camera survey did show dirt and debris at a number of locations within the piping that could retain residual oil and allow a continual release of oil through the storm drain system and into the Ohio River. The camera survey also showed oil staining at different levels within the 48-inch piping based on fluctuating water levels inside the piping as influenced by the river height. A pipe cleaning subcontractor was hired to vacuum out the dirt and debris located between inlet #7 through inlet #2. Once all of the debris was removed, a high-pressure jet washing machine was run through the 48-inch piping in an attempt to remove oil residue that was observed on the inside walls of the piping. The jet washing did not remove all of the oil staining on the inside of the piping since some of the oil had hardened and similar to a tar like consistency. The residual left on the piping is not causing sheening coming from the outfall.

<u>Phase 3 – Cleanup of the impacted shoreline of the Ohio River</u>

The initial scope of work in the OPA 90 work plan included the cleanup of an estimated 200 feet of shoreline including the removal of all visible oil, contaminated debris, vegetation, impacted soils and restoration of the property to pre-response conditions to the maximum extent possible. Proper disposition of oil-contaminated soil and debris generated by the removal activities. Coordination with the Army Corp of Engineers may be required to determine the complete scope of cleanup and restoration requirements.

EPA negotiated an access agreement with Genesee & Wyoming Inc, the parent company of the Aliquippa & Ohio River Railroad (AORR) which was signed on August 14, 2019. The agreement allowed EPA and their contractors to cross the railroad tracks by foot multiple times a day and move equipment across the tracks as part of the riverbank cleanup.

Coordination on federal and state requirements with the Army Corp Engineers, U.S Fish & Wildlife Service, PADEP and the State Historic Preservation Office have also been completed and the requirements were incorporated into the cleanup plans.

EPA and the ERRS contractor mobilized to the Site during the week of September 16, 2019 to begin cleanup operations on the riverbank. The river height during cleanup was on average 14 feet. The average river height from when the spill was discovered (May 2017) through the spring of 2019 was on average a height of 16 feet to 18 feet. The lower river height exposed a significant amount of riverbank and river bottom that was included in the cleanup process. EPA's START contractor marked off the impacted riverbank in 10-foot increments for tracking of progress and documentation of conditions. An assessment of the riverbank estimated that 360 feet of riverbank was impacted. The assessment also identified that the cleanup area along the 360 feet of riverbank could be divided into 4 discreet bands including the (1) a vegetative area, (2) an area consisting of soil, (3) a 2-3 foot gravel area and (4) the river bottom.

Based on these 4 discreet bands, cleanup operations were broken down into five types of operations including (1) agitation of the sediments of the river bottom to release any oil or sheening that was entrained within the sediments, (2) removal of a 2-3 foot horizontal gravel band that extend down 1-2 feet deep, (3) scraping a discreet tar layer off the top of any soils, (4) removal of oil-contaminated vegetation and (5) removal of oil-contaminated rocks and debris. Conducting operations from river access by a work barge proved cost prohibited. It was also not feasible to take heavy equipment down the hillside as initially planned. All cleanup operations were conducted by the ERRS cleanup crew using shovels and other hand tools.

Cleanup operations began with clearing and grubbing impacted vegetation. Vegetation that showed black oil was cut back to remove any contamination. Root systems were not removed to allow for regrowth of vegetation. A larger area on the southside of the outfall was further cleared for storage of materials and contaminated sediments. Vegetation was then bundled and carried to a roll off staged onsite for disposal.

After removal of the contaminated vegetation, operations began upstream of the outfall at cleanup marker 360. Crews began agitating the sediments of the river bottom with a shovel to release any oil and sheening. Rainbow sheening, silver sheening and small amounts of oil were observed during these operations. The oil specs quickly turned to sheen. All sheening was contained within the absorbent booms and picked up with absorbent pads when possible. Oil coated rocks and bricks were also removed during the operations and staged in piles.

Crews then began operations to excavate the 2-3 foot gravel area along the riverbank starting at post 270. Crews removed the 3 feet gravel band along the length of the riverbank down to depth of 1 foot. In some areas the depth was extended to 2 feet if oil continued to be present in the subbase material. The excavated material was then staged on the adjacent riverbank to allow to dry out before final removal of material. Removal of the sediments by a high capacity vacuum truck proved not to be successful with the hose eventually clogging in various locations along the 300 feet of hose needed. Instead, contaminated sediments and debris were placed into supersacks and staged on the hillside for removal by a crane at the end of the cleanup.

During excavation of the gravel area and cleanup within the 360 feet of impacted riverbank, oil covered rocks were being staged near the access steps. Based on the size of the pile, the crew began carrying the oil covered rocks up the stairs for placement into a roll off. Over three days of work, the crew removed 325 5-gallon buckets of oil covered rocks from the riverbank to the staged roll off.

Cleanup continued with the excavation of contaminated sediment, soils and rocks from the remaining impacted riverbank and river bottom from both the southern and northern side of the outfall. Remaining contaminated materials that were initially excavated and staged on the riverbank and not removed with the vac truck were placed into the super sacks. Super sacks were placed in the staging areas and excavated material was transferred into the sacks by 5-gallon buckets. The overall cleanup of the riverbank on both the northern side (Post 230 to 180) and the southern side (Post 230 to270) included removal of the 3-foot band of gravel material down to an average depth of 1.5 feet. The area closet to the vegetation was scraped removing all surficial contaminated materials. Removal of a large amount of oil contaminated rocks and agitating the river bottom while excavating the gravel area.

The crew then moved on to working on both sides of the outfall (Post 180 to 230). The area on the north side of the outfall was covered with a tarlike oil layer. In some areas, the tarlike oil layer was scraped off uncovering brown soil which was not impacted by oil. Other areas showed an oil layer trapped within the gravel band under the tarlike covering as well as oiled rocks. The area in front of the outfall had significant rainbow sheen and oil when the gravel/sediments were excavated and agitated. Scraping around the outfall proper showed large rocks with visual oil contamination. The large rocks could not be removed without impacting the stability of the hillside and were left in place. The crew then moved on to finish the area on the southern end of the outfall. The last 30 feet of the 3-foot gravel band was excavated from post 200 to 230 with agitation of the adjacent river bottom. Excavated sediments were placed into the staged supersacks. The southern side of the outfall was also covered with the tarlike layer. Brown soil was underneath the tarlike substance once removed. The gravel area in front of the outfall on the southern side was similar to the northern side showing heavier oil and sheening when excavated.

Excavation of impacted sediments, gravel and rocks and removal of all tarlike material was completed on or around October 28, 2019. A total of 45 supersacks were staged on the hillside ready to be lifted by the crane. All of the absorbent boom was changed out for continued monitoring of sheening from the work area. The handrail and concrete area under the stairs were scraped to remove all residual oil and the handrail was repainted.

Once the contaminated sediments, rocks and debris were removed, a temporary chute was installed beside the steps leading down to the outfall to deliver gravel and riprap down to the riverbank. Four (4) tons of the crush-n-run gravel was placed as a base in front of the outfall. Fifteen (15) tons of No 4 riprap was then moved down to the riverbank and approximately 50 feet of riprap was placed on both sides of the outfall for a total of 100 feet. Boom maintenance and final housekeeping of the riverbank was also completed. 100 feet of containment boom was left in place to conduct monitoring through June 2020 at the request of the PADEP.

On November 12 through 13, 2019, a 90-ton crane mobilized to the Site and lifted all forty-five (45) super sacks containing the contaminated sediment, soil and rock from the riverbank to roll offs staged by the access steps. Four (4) roll offs containing approximately 70,000 pounds (36.58 tons) of contaminated debris were transported to the Waste Management American Landfill in Waynesburg, Ohio for disposal.

3.4.2 Chronology of Events

For the period of May 26, 2017 – August 3, 2017

PADEP, through a cleanup contractor, placed and maintains absorbent and containment boom along the contaminated shoreline to prevent further migration of oil into the Ohio river.

PADEP conducted a visual assessment of the adjacent properties in an attempt to locate a source of the oil. The area directly above the outfall is the location of the former Aliquippa Tin Mill Site. The property was clear of all buildings and was being filled and graded during the assessment. No visual evidence of oil spills or discharges. (Figure 2 – Site Layout)

An initial walkthrough of the adjacent Industrial Park on May 28, 2017 found no evidence of oil spills or discharges. None of the building interiors were checked at the time of the walkthrough since the assessment was conducted after hours and no one was available for admittance to the buildings.

There are a series of ten (10) storm drains on the property leading to the outfall. The storm drains were installed in 2016 by the Pennsylvania Department of Transportation (PennDOT) in conjunction with the current property owner. On or about May 28, 2017, PADEP conducted a visual assessment of the storm drains and found oil sheen/residue/odor in several of the catch basins upstream of the outfall. PADEP did not observe sheening at the furthest upstream catch basin which was just off of the property.

On or about June 28, 2017, the FOSC obtained FPN# E17309 and issued a PRFA to the PADEP to maintain containment and/or absorbent boom to minimize further migration of oil, determine the source of the oil and remove all contained oil and oiled debris from the impacted shoreline.

On or about July 13, 2017, PennDOT through a subcontractor conducted a camera inspection of the storm drain system and observed oil infiltration points on the northern end of the former Aliquippa Tin Mill property. (Figure 3 – Inlet Map)

For the period of August 3, 2017 – September 30, 2017

PADEP, through a cleanup contractor, continues to maintain absorbent and containment boom at the outfall and along the contaminated shoreline to prevent further migration of oil into the Ohio river. PADEP reported that monitoring at the outfall continued to show an intermittent discharge of oil onto the shorelines and into the Ohio River.

Analytical results from a sample collected from the offsite catch basin did not show the presence of oil which supports that the source is not from the area to the west of the property which includes a set of railroad tracks and Route 51.

PADEP has confirmed that the source of oil is located on the former Aliquippa Tin Mill property. The camera inspection of the storm drain system shows oil infiltrating into the storm water conveyance system between inlet #7 and inlet #8 on the northern end of the of the property. Since the property has been razed and graded, it is believed that there is an underground source associated with historic operations at the Site.

For the period of October 1, 2017 – December 30, 2017

Monitoring at the outfall continues to show an intermittent discharge of oil onto the shorelines and into the Ohio River. PADEP, through a cleanup contractor, continued to maintain absorbent and containment boom at the outfall and along the contaminated shoreline to prevent further migration of oil into the Ohio river through November 2017 and transitioned booming to the Property Owner. Loose debris was removed during weekly change out of absorbent booms and pads.

PADEP and the Property Owner met on or about November 17, 2017 to discuss a Notice of Violation letter issued to the Property Owner dated September 22, 2017. As a result of the meeting, the Property Owner agreed to takeover defensive actions at the outfall and along the shoreline and to conduct tests pits along the corner of his property where the previous storm drain study showed oil infiltrating into the storm drain system.

On or about December 4, 2017, the Property Owner installed containment and absorbent boom to conduct defensive actions at the outfall and along the shoreline.

During the week of December 4, 2017, PADEP reports that two test pits were excavated along the storm drain system near Steel Street on the former Aliquippa Tin Mill property. The test pits showed a set of pipes approximately 3 feet deep. In one of the test pits, the 4-inch diameter piping had been cut and the end of the piping crimped. The piping in both test pits contained oil. Excavation of both test pits continued to approximately 20 feet where the storm drain system had been installed. Oil was found in and around the storm drain system in both test pits. The test pit which included the piping which had been cut did not show significant oil contamination until the storm drain system however the second test pit showed significant oil staining throughout the 20 feet down to the storm drain system. The test pits had been filled back in before samples could be collected to fingerprint the oil in the piping that had been cut, soil at the bottom of the test pits and at the outfall. Fingerprint analysis is needed to determine if the oil at the piping and storm drain system is the same oil coming from the outfall.

Results from the test pit operations indicate that additional assessment work is warranted. One of the test pits showed a cut pipeline above the storm drain system and that there is oil along the storm drain system. The second test pipe showed oil contamination throughout the 20 feet but the test pit operations did not confirm the exact source of the oil.

Between December 13, 2017 and December 20, 2017, PADEP initiated discussions with EPA to take over as lead agency for continued assessment and removal activities. The transition from PADEP to EPA was finalized on or about January 4, 2018**.**

For the Period of January 1, 2018 – April 1, 2018

EPA assumed the lead agency role for the investigation and defensive actions. The OSC obtained access from the Property Owner on January 26, 2018 at which time took over defensive booming operations at the outfall and along the shoreline to contain the oil and prevent further migration into the Ohio River. There has a been a significant increase in oil coming from the outfall starting after the test pit operations. Oil containment measures inside the storm drain at a few of the inlets also show an increase in oil.

The OSC conducted a historical review of the property and limited offsite evaluation to determine the potential of any offsite sources to be the source of oil or contributing to the oil being discharged from the outfall. To date, no offsite sources have been identified based on the review. Oil collection snares were placed inside inlet #14 of the storm drain system which is located upgradient from the test pit location. No oil has been observed on the oil collection snares from inlet #14.

The OSC had a utility line survey conducted around the test pit locations where the cut piping was discovered. Underground piping was traced approximately 500 feet in both a north and south direction from the cut piping. The utility line survey did not show that the piping was connected to any source but did show where the lines may end. Based on the survey, the OSC calculates that there could be 1000 feet of underground piping which could contain 1000 to 1500 gallons of material if full. The survey also identified a rectangle/oval anomaly directly south of the test pit location near the traced piping. It is not clear if the anomaly is fill material or some type of underground structure/tank. At this time, the OSC does not plan on conducting any additional investigative fieldwork.

The results of the utility line survey and findings from the storm drain monitoring were provided to the Property Owner and PADEP and included under Figure 4. (Magnetometer Survey Map).

For the Period of April 1, 2018 – May 1, 2018

EPA continues to conduct defensive actions at the outfall and along the shoreline of the Ohio River pending approval of the ceiling increase to cover removal actions as specified in the OPA 90 Work Plan. The amount of oil being discharged appears the same since EPA began defensive actions in February. There continues to be a sizeable amount being collected from within the storm drain at the inlets down gradient from the cut piping and within the containment at the outfall.

For the Period of May 1, 2018 – July 15, 2018

EPA continued to conduct defensive actions at the shoreline with booming operations being increased to twice a week on or about May 8, 2018. Defensive actions include change out of booms along the shoreline, removal of any free product using sorbent pads and change out of snares inside the storm inlets. Disposal of a roll off containing oil-contaminated sorbents and debris took place on May 16, 2018.

The amount of oil being discharged appears to be the same since EPA began defensive actions in February 2018. There continues to be a sizeable amount being collected from within the storm drain at the inlets down gradient from the cut piping and within the containment at the outfall.

An update to the April 2018 OPA 90 Workplan was submitted to the NPFC on July 19, 2018. The OPA Project Plan outlines the removal activities to be conducted at the location of the cut piping where oil has been observed entering into the storm drain system, the impacted storm drain system and cleanup of the shoreline and updates the associated costs. EPA coordinated with the NPFC while waiting on the approval for the ceiling increase.

For the Period of July 15, 2018 – October 7, 2018

EPA continued to conduct defensive actions at the outfall and shoreline with booming operations being conducted twice a week. Defensive actions include change out of booms along the shoreline, removal of any free product using sorbent pads and change out of snares inside the storm inlets. Disposal of a roll off containing oil-contaminated sorbents and debris took place on July 26, 2018.

EPA received the ceiling increase for cleanup actions at the Site on or about August 9, 2018. The OSC initiated a task order to the EPA cleanup contractor which was signed on August 21, 2018. The OSC also initiated a new access agreement with the Property Owner since the current one was only for booming operations. EPA requested that the Property Owner sign and return the Access Agreement by September 4, 2018. The Property Owner through its counsel reached out to EPA requesting an extension on the access agreement so they could discuss their property concerns with regards to the cleanup operations and make some modifications to the Access Agreement. EPA has been in discussions with the Property Owner on the Access Agreement from August 29, 2018 through October 3, 2018. On or about October 3, 2018, EPA received verbal access from the Property Owner with the final signed copy to be completed within the week. EPA mobilized to the Site on October 8, 2018 and initiated removal response activities.

For the Period of October 8, 2018 – October 23, 2018

EPA mobilized to the Site on October 8, 2018 and initiated removal response activities. A camera survey of the storm water conveyance system was conducted which showed four (4) infiltration points of oil entering the piping. Three of the infiltration points, and the most significant infiltration points, were found in the first 400 feet of the piping. The most substantial infiltration point was located at 77 ft on the south side of the pipe with heavy dark oil flowing into the storm drain piping. This is in the same area where the December 2017 test pits were conducted which discovered the sheared piping and the contaminated soils down to the water table. The camera survey also identified a number of groundwater infiltration spots along the conveyance system.

Excavation began on the western side of the Site in the same area of the December 2017 test pits. This area is bordered by Woodlawn Rd to the west, Steel Street to the north and an active material lay down area operated by a tenant of the Property Owner to the south. A permanent fence separates the tenant's property from the cleanup area. Temporary fencing was installed around the perimeter of the Site and separates the cleanup area from both Woodlawn Road and Steel Street. This excavation area will be called "Area A". Excavation of Area A began in an area approximately 60 ft by 60 ft and to varying depths.

The nestled pipes which appeared to have been sheared during the installation of the storm water conveyance system were first to be uncovered. The nestled piping was located approx. 4 feet below ground surface (bgs) on the north side of the storm water conveyance system running perpendicular to Steel Street. Excavation activities did not uncover the nestled pipes located on the south side of the storm water conveyance system. It is believed that the nestled pipes on the south side fall inside the tenant's property and fence line and not accessible as part of this cleanup. The temporary caps placed on the pipes in December 2017 were still in place. Stained soil was visible around the nestled piping. A fourth pipe, containing oil, was found alongside the nestled piping. All the temporary caps were replaced with removable plugs including the fourth pipe.

Excavations in this area discovered multiple oil seeps, oil lenses and pockets of oil contaminated soils throughout the vertical profile. Excavation alongside Steel Street showed oil seeps in the first 5 feet of the sidewall. Smaller seeps were also observed further down on the side wall. This area was then back filled due to the proximity to the road and a utility pole. The nestled pipes were cut back by 25 feet to continue with excavations in that area. Heavily stained soil was observed in and around the nestled piping. As the weather warmed up, oil was visibly seeping from the area around and underneath the cut pipes. Contamination below the nestled pipes did not extend vertically for the full 20 feet. There was an estimated 6-foot section of soil which visibly appeared nonimpacted below the contaminated soils under the nestled piping.

Excavation in Area A then moved over to the southern side of the area to begin excavating around the storm water piping. The top of the piping was encountered around 15 feet and extended down to 19-20 feet bgs. Groundwater was encountered around 20 feet bgs. There was no visible oil in the groundwater until oil seeps were encountered. The ERRS contractor continued with excavation in Area A around the storm water piping on the south side of the storm water pipe near Woodlawn Rd. An oil seep was uncovered at approx. 15 feet down on the sidewall. Oil was seeping down the sidewall into the groundwater. A second seep area was discovered at the water table on the south side of the piping. Heavy dark oil and sheening eventually covered the groundwater that had filled the open excavation. The groundwater level stabilized at around 20 ft.

ERRS continued to excavate in Area A forming benches and slopes in order to work safely. ERRS excavated an area on the northern side of the excavation area to see if groundwater was impacted. Similar to the southern side, groundwater was not visibly impacted until oil seeps and oil lenses were encountered. The total excavation area for Area A consisted of 60 feet by 60 feet with an average depth of 15 feet with a depth of 20 feet in the area of a storm water piping. All of the material removed from this area was impacted by oil and stockpiled for offsite disposal.

Since excavation around the sheared piping and around the storm water piping did not locate a discreet source of oil to be removed and groundwater was not impacted when encountered, it is believed that the oil entering the storm water piping is from historical releases that are contained subsurface and seeping into the groundwater when a pathway is formed. For the ongoing release at the Site, the oil seeps are migrating into the groundwater around the storm water piping and infiltrating the piping at areas which are compromised or at the joints. The storm water conveyance system is acting as a conduit for the oil to enter the Ohio River.

Since there is no discreet source of oil to remove, it was determined the most effective mitigation efforts are to replace approx. 340 feet of metal storm water piping with HPDE piping and seal off any oil seeps from entering this section of the storm water conveyance system. PADEP was onsite on October 22, 2018 to observe the actions conducted to date. EPA discussed the proposed actions with the PADEP to mitigate the discharge of oil into the storm water conveyance system and into the Ohio River.

ERRS continued to conduct defensive actions at the outfall and along the shoreline to contain and collect the heavy fuel oil from entering the Ohio River. During the reporting period, START collected a sample from one of the nestled pipes and a sample from an inlet upgradient from the Site to determine if either of them were a source of the fuel oil at the outfall. Samples from both potential sources as well as a sample from the outfall were sent to the USCG Marine Safety Laboratory (MSL) for fingerprint analysis on or about October 18, 2018. Results of the fingerprint analysis were not received during this reporting period.

<u>For the Period of October 24, 2018 – November 30, 2018</u>

On or about October 23, 2018, EPA began the removal and replacement of approximately 340 feet of the galvanized steel metal storm water piping between inlets #7 and inlet #8. The first sections replaced started at 60 feet east of inlet #8. There was no observed oil in the first 60 feet based on the camera survey and there is a sanitary sewer line and high-pressure water line running above the first 60 feet of storm water piping. Initial excavations showed the first sections of piping that were scheduled to be replaced (60 ft to 120 ft from inlet #8) had the most oil seeping into the groundwater and into the storm water piping. ERRS began prepping the area for the removal and replacement of the first section of piping. Additional excavation of the area was required to ensure safe placement of double stacked trench boxes as well as a stable base for the excavator. Once the Site was prepared for the removal of piping, one section was removed at a time and the gravel base excavated. The new HPDE corrugated piping was placed back into the trench. ERRS connected the first section of HDPE pipe to the existing metal pipe using metal ratcheting bands and a geotextile adhesive to seal the joint. The remaining sections of HDPE piping have an integral bell and spigot connection so there is no requirement for bands at each of the remaining joints. After the new piping was installed, it was leveled and graded to ensure a proper slope.

Once the first three (3) sections of piping were installed, flowable concrete fill was placed around the 3 sections of piping on or about October 31, 2018. The flowable concrete fill was added to seal off the sidewalls of the excavation where the oil was observed seeping and to ensure that oil could not infiltrate into the pipes. The first lift of the flowable fill was placed and caused the pipes to float and the joints to pop open. The minor setback with the pipes floating allowed the flowable fill to get under the pipes and seal off any additional pathway of oil following the gravel bedding. On or about November 5, 2018, placement of the flowable fill around the 3 sections of pipe was completed and covered an area approximately 5 feet on each side of the pipe by 60 feet long by 5 feet high. After replacing the 3 sections of piping and placing the flowable fill, the amount of oil being discharged at the outfall decreased significantly.

ERRS continued with the excavation of the existing metal piping and replacement with the HDPE piping in an eastern direction with ramps constructed on both sides of the excavation for safe accessibility. ERRS utilized the double trench box to continually provide protection for employees. The trench box was placed at the bottom of the excavation and was continuously moved east along with the excavation. As the metal pipe replacement continued east, ERRS backfilled the western portion of the excavation. Twelve 20-foot sections for a total of 240 feet of HDPE pipe had been installed through November 30th.

Unforeseen delays during the excavation and replacement of piping included some mechanical repairs/issues with the excavators and large concrete foundations in the subsurface making excavation and placement of trench boxes difficult. In addition, large stockpiles of both clean and contaminated soils in the small work area required extra moving of soil which slowed down the progress.

The Oil Sample Analysis Report for samples collected on October 17, 2018 was received from the USCG MSL on October 29, 2018 stating that the sample from one of the nestled pipes nor the sample from the offsite inlet were a match to the sample from the outfall. Based on the inconclusive findings in the Oil Sample Analysis Report, START collected an additional 5 samples to be sent to the USCG MSL to compare fingerprint characteristics to previously fingerprinted samples. Two (2) potential source samples were collected from oil seep area #1 and #2 located in the excavation area on October 30, 2018. Samples were also collected from the remaining three (3) nestled pipes on November 1, 2018. Samples were submitted to the USCG MSL on November 7, 2018.

USCG MSL issued an Oil Sample Analysis Report dated November 26, 2018 for the second round of oil sample submitted for fingerprint analysis. The report showed that the samples from the seep areas #1 and #2 contained heavy fuel oil with characteristics similar to those of the sample from the outfall. Differences are attributable to weathering and to a slight non-homogeneity to the sampled product. The report also showed that the samples collected from the nestled piping contained heavy fuel oil with characteristics different from those of the sample from the outfall. The differences were not attributable to weathering.

EPA's START contractor also began to collect soil samples from underneath the storm water piping during the excavation and replacement operations to determine if oil contamination remains in the material underneath the piping. Samples were analyzed for semivolatile organic compounds (SVOCs) in compliance with regulatory standards. On or about November 28th, START collected two (2) soil samples from underneath the storm water piping located at pipe section #11 and #12. The soil samples were collected at a depth of about 20 feet below ground surface along the storm water system pathway. The results from the analysis were not received during this reporting period.

Transportation and disposal of oil contaminated soil began on or about November 14, 2018. Contaminated soil was being transported to Max Environmental Technologies landfill in Bulger, Washington County, PA. As of November 30th, 2,393 tons of contaminated soil had been properly disposed of offsite.

ERRS continued to conduct defensive actions at the outfall and along the shoreline to contain and collect any heavy fuel oil from entering the Ohio River. The amount of oil coming from the outfall has decreased significantly since replacement of the first 60 feet of piping.

<u>For the Period of December 1, 2018 – February 14, 2019</u>

ERRS continued with the excavation of the existing metal piping and replacement with the HDPE piping in an eastern direction with ramps constructed on both sides of the excavation for safe accessibility. While prepping the work area for the remaining 80 feet of piping, ERRS encountered a number of obstacles which slowed down the replacement of piping. The sidewalls of the excavation were a fill material rather than slag which was encountered previously. ERRS was required to step down the area to safely work with the excavator and trench boxes. A large underground structure was encountered which required the rental of a hammer ram in order to breakdown the structure to create sufficient space for the stepdown area. This caused a delay of approximately 4 days.

In the same work area, there was a utility pole located on the southern side in between the fencing and the sidewall excavation. There was concern that the excavation may cause the utility pole to slip. Extra safety measures were taken to secure the utility pole. Once the obstacles were addressed, excavation of the trench continued, and the double trench boxes were utilized to continually provide protection for the crew. On December 11-12, 2018, pipe sections #13 and #14 were installed. START collected samples under each of the pipe sections to document any oil contamination that might remain under the piping. Excavation continued for the placement of the remaining 40 feet of piping. On the morning of December 13, 2018, the crew observed slippage of fill material in between the double stacked trench boxes and the side wall. There was concern that the freeze-thaw cycle of the soils was causing the southern sidewall to become less stable and have slippage. A second set of trenches boxes were rented to place in tandem with the existing trench boxes. While preparing for the second set of trench boxes, the side wall containing the utility pole collapsed into the excavation area. The utility pole remained upright but power was lost when the sidewall collapsed. An electrical contractor arrived and was able to restore temporary power to the area except for the impacted utility pole which was then removed. Pipe section #14 was damaged when the sidewall collapsed and would need to be replaced.

Work resumed with completion of the stepdown area, excavation of the fill material from the trench, placement of the additional trench boxes and exit ramps from the trench boxes. The damaged pipe section #14 was replaced. Once the excavation was close to the inlet, it was determined that we could not connect the HDPE piping directly into the inlet box. The last 20-foot section of metal piping had to be left in place. The final section of metal piping was removed and pipe section #15 was placed on December 18, 2018 for a total of 300 feet of piping. A geotextile adhesive with ratchet straps was placed on the joint connecting the existing metal piping to the last section of HDPE piping to seal the joint. A concrete collar was also placed around the joint. ERRS backfilled the entire excavation area to a rough grade using existing fill material and approx.1030 cubic yards of crush-n-run gravel. All equipment and personnel were demobed on or about December 21, 2018. The temporary fencing was left in place until ERRS returned to conduct final compaction and grading.

Final compaction and grading was scheduled for the week of January 7, 2019 however was delayed due to the government shutdown. During the week of February 4, 2019, ERRS mobilized to the Site to complete the final backfilling with an additional 370 cubic yards of crush-n-run gravel, final compaction and grading, reinstalled the utility pole and reconnect permanent power to the property. The temporary fencing was removed except for 150 feet which was left in place near the work trailers.

During the week of December 3, 2018, a pipe cleaning contractor was onsite to clean out the remaining 1300 feet of storm water piping that was not being replaced. The camera survey conducted at the beginning of October showed dirt and debris at a number of locations within the piping that could retain residual oil and allow a continual release of oil through the storm drain system and into the Ohio River. A vacuum truck was utilized to remove all the debris located between inlet #7 through inlet #2. Once all of the debris was removed, a high-pressure jet washing machine was run through the 48-inch piping in an attempt to remove oil residue that was observed on the inside walls of the piping.

Transportation and disposal of oil contaminated soil was completed on December 10-11, 2018. An additional 465 tons of contaminated soil was transported to Max Environmental Technologies landfill in Bulger, Washington County, PA. A total of 2,858 tons of contaminated soil have been properly disposed of offsite. A roll off of oil-contaminated booming and debris was also taken offsite on December 12, 2018 for disposal at the Waste Management American Landfill in Waynesburg, Ohio.

EPA's START contractor continued to collect soil samples from underneath the storm water piping during the excavation and replacement operations. Three (3) soil samples were collected during the reporting period from underneath the storm water piping located at pipe sections #13, #14 and #15. The soil samples were collected at a depth of about 20 feet below ground surface along the storm water system pathway. The samples were sent to a EPA CLP Tier IV laboratory and unvalidated results were received on or about February 5, 2019. The results from the analysis are under QA/QC review.

ERRS changed out all of the booming (harbor boom and absorbent boom) after completing the replacement of the storm water piping. The amount of oil coming from the outfall has decreased significantly to where no visual oil is coming from the outfall. Residual oil and sheening being collected within the booming appears to be coming from the oil contaminated riverbank and vegetation. ERRS will conduct booming operations every 2 weeks while waiting to remobe for the riverbank cleanup operations in the spring.

For the Period of February 5, 2019 – June 1, 2019

EPA coordinated with state and federal agencies to identify requirements which may need to be addressed as part of the riverbank cleanup. EPA coordinated with the Army Corp Engineers, U.S Fish & Wildlife Service, PADEP and the State Historic Preservation Office. EPA sent a Consent for Entry Agreement to the Aliquippa & Ohio River Railroad (AORR) on April 18, 2019 in order to cross the railroad tracks by foot multiple times of day and move equipment over the tracks as part of the riverbank cleanup. Negotiations for access were being conducted between Genesee & Wyoming Inc, parent company of AORR. EPA continued to conduct limited booming at the outfall and along the shoreline of the Ohio River. No visible oil was observed coming from the outfall. Residual oil and sheening appears to be coming from the oil contaminated riverbank and vegetation.

For the Period of June 2, 2019 – August 15, 2019

EPA negotiated an access agreement with Genesee & Wyoming Inc, the parent company of the Aliquippa & Ohio River Railroad (AORR) which was signed on August 14, 2019. The agreement allows EPA and their contractors to cross the railroad tracks by foot multiple times a day and move equipment across the tracks as part of the riverbank cleanup.

Coordination on federal and state requirements with the Army Corp Engineers, U.S Fish & Wildlife Service, PADEP and the State Historic Preservation Office have also been completed and the requirements have been incorporated into the cleanup plans.

The OSC began working with the ERRS cleanup contractor to mobilize to the Site during the week of September 3, 2019 to begin the riverbank removal response activities. A site visit with the Aliquippa and Ohio River Railroad was also being setup as required by the access agreement.

There continued to be no visible oil coming from the outfall. Residual oil and sheening appear to be coming from the oil contaminated riverbank and vegetation.

For the Period of August 15, 2019 – December 30, 2019

EPA and ERRS contractor mobilized to the Site during the week of September 16, 2019 to begin cleanup operations on the riverbank. The river height from when the spill was discovered (May 2017) through the spring of 2019 was on average a height of 16 feet to 18 feet. The river height throughout the summer of 2019 showed the level to be decreasing from 18 feet down to 13.5

feet. At the start of cleanup operations, the river height was 14 feet which exposed a significant amount of riverbank and river bottom to be included in the cleanup process. EPA's START contractor marked off the impacted riverbank in 10-foot increments for tracking of progress and documentation of conditions. An assessment of the riverbank estimated that 360 feet of riverbank was impacted. The assessment also identified that the cleanup area along the 360 feet of riverbank could be divided into 4 discreet bands including the (1) a vegetative area, (2) an area consisting of soil, (3) a 2-3 foot gravel area and (4) the river bottom.

Cleanup operations began with clearing and grubbing impacted vegetation. Vegetation that showed black oil was cut back to remove any contamination. Root systems were not removed to allow for regrowth of vegetation. A larger area on the southside of the outfall was further cleared for storage of materials and contaminated sediments. Vegetation was then bundled and carried to a roll off staged onsite for disposal. Access to the riverbank can only be accessed by a steep flight of stairs from the former Aliquippa Tin Mill property. Conducting operations from river access by a work barge proved cost prohibited. It was also not feasible to take heavy equipment down the hillside as initially planned. All cleanup operations were conducted by the ERRS cleanup crew using shovels and other hand tools.

From September 23, 2019 through September 27, 2019, cleanup operations began upstream of the outfall at cleanup marker 360. The crew began working in the first 20 feet of riverbank. The sediments of the river bottom were agitated by shovel to release any oil and sheening. Rainbow sheening, silver sheening and small amounts of oil were observed during these operations. The oil specs quickly turned to sheen. All sheening was contained within the absorbent booms and picked up with absorbent pads when possible. Oil coated rocks and bricks were also removed during the operations and staged in piles.

From September 30, 2019 through October 4, 2019, cleanup crews began operations to excavate the 2-3 foot gravel area along the riverbank starting at post 270. Crews removed the 3 feet gravel band along the length of the riverbank down to depth of 1 foot. In some areas the depth was extended to 2 feet if oil continued to be present in the subbase material. The excavated material was then staged on the adjacent riverbank to allow to dry out before final removal of material. Crews removed approximately 40 feet of the material on the south side of the outfall (post 230 to 270) and 80 feet on the north side of the outfall (post 30 to 110) during this period. While excavation of materials was occurring, the OSC and the ERRS RM were evaluating options to then move the staged contaminated sediments from the riverbank to the staging area on the former Tin Mill property for disposal. Two (2) options were being evaluated including removal of sediments by a high capacity vacuum truck or placing the contaminated material into 2000 pound capacity "super sacks" for removal by a crane. On October 7, 2019, a high capacity vacuum truck was brought to the Site to determine its viability. 300 feet of hose was needed to go down the steps and access the excavated sediments staged for disposal. The operations worked initially until the hose continued to clog in various locations along the 300 feet of hose. After three hours of trying to vacuum up the contaminated materials, approximately 2 cubic yards of material were transferred to the roll off from the vac truck. Additional material remained in the hose which would later be removed with disposal of the hose. The vacuum truck operations were not as effective as anticipated. Option 2 of filling supersacks with the contaminated sediments and removal of sacks by a crane would be the final solution to move excavated material from the riverbank to the roll offs for disposal.

The crew began prepping the riverbank for staging of the supersacks. Additional vegetation was removed on both the north and south side of the outfall for staging areas. The crew began consolidating oil covered rocks that had been previously staged along the northern and southern ends of the riverbank to the outfall area. Based on the size of the pile, the crew began carrying the oil covered rocks up the stairs for placement into the roll-off. Over three days of work, the crew removed 325 5-gallon buckets of oil covered rocks from the riverbank to the staged roll off. From October 11, 2019 through October 29, 2019, crews worked to excavate contaminated sediment, soils and rocks from the remaining 130 feet of impacted riverbank and river bottom from both the southern and northern side of the outfall. Remaining contaminated materials that were initially excavated and staged on the riverbank and not removed with the vac truck were placed into the super sacks. Super sacks were placed in the staging areas and excavated material was transferred into the sacks by 5-gallon buckets. The crew finished the riverbank area from post 110 to post 190 which included removal of the 3-foot band of gravel material down to an average depth of 1.5 feet. The area closet to the vegetation was scraped removing all surficial contaminated materials. The material underneath appears to be brown soil/peat moss mixture. A large amount of oil contaminated rocks were removed. Crews agitated the river bottom while excavating the gravel area.

The crew then moved on to working on the north side of the outfall. This area was covered with a tarlike oil layer. In some areas, the tarlike oil layer was scraped off uncovering brown soil which was not impacted by oil. Other areas showed an oil layer trapped within the gravel band under the tarlike covering as well as oiled rocks. The area in front of the outfall had significant rainbow sheen and oil when the gravel/sediments were excavated and agitated. Scraping around the outfall proper showed large rocks with visual oil contamination. The large rocks could not be removed without impacting the stability of the hillside. The crew then moved on to finish the area on the southern end of the outfall. The last 30 feet of the 3-foot gravel band was excavated from post 200 to 230 with agitation of the adjacent river bottom. Excavated sediments were placed into the staged supersacks. The southern side of the outfall was also covered with the tarlike layer. Brown soil was underneath the tarlike substance once removed. The gravel area in front of the outfall on the southern side was similar to the northern side showing heavier oil and sheening when excavated. Excavation of impacted sediments, gravel and rocks and removal of all tarlike material was completed on or around October 28, 2019. A total of 45 supersacks were staged on the hillside ready to be lifted by the crane. All of the absorbent boom was changed out for continued monitoring of sheening from the work area. The handrail and concrete area under the stairs were scraped to remove all residual oil and the handrail was repainted.

On October 28, 2019, START deployed the EPA boat to take photographs of the riverbank after cleanup operations and before placing the riprap. A temporary chute was installed beside the steps leading down to the outfall to deliver gravel and riprap down to the riverbank. Four (4) tons of gravel and fifteen (15) tons of No 4 riprap was delivered. The crew placed the crush-n-run gravel as a base in front of the outfall. From October 29, 2019 through November 8, 2019, the crew transferred the 15 tons of riprap down to the riverbank and placed approximately 50 feet of riprap on both sides of the outfall for a total of 100 feet. They also completed boom maintenance and final housekeeping of the riverbank. 100 feet of containment boom was left in place to conduct monitoring through June 2020 at the request of the PADEP.

During the cleanup of the riverbank, the OSC and ERRS RM were also working to secure a contractor to remove any remaining oil in the nestled piping which included four (4) lines of piping located near the corner of Woodlawn Road and Steel Street. The piping was left accessible after the Phase I work in order to remove any remaining oil. Attempts to obtain a contractor were unsuccessful based on a number of unknown variables and logistical constraints. On November 5, 2019, the four nestled pipes were closed in place. Each pipe was opened up and hydraulic cement was placed inside the pipe to fill approximately 12 inches vertically within the 4-inch diameter pipe. The temporary plugs were placed back on each of the pipe as an additional measure. After plugging all four pipes, the hole was backfilled with the crush-n-run gravel, compacted and brought to grade. Coordinates of the piping have been taken.

On November 12 through 13, 2019, a 90-ton crane mobilized to the Site and lifted all forty-five (45) super sacks containing the contaminated sediment, soil and rock from the riverbank to roll offs staged by the access steps. Four (4) roll offs containing approximately 70,000 pounds of contaminated debris were transported to the Waste Management American Landfill in Waynesburg, Ohio for disposal. All equipment was demobed from the Site from November 14, 2019 through November 18, 2019.

Between April and May 2020, the EPA OSC conducted periodic inspections of the riverbank and outfall. There was no oil or sheening observed. The containment boom was removed on or about June 8, 2020. All onsite activities have been completed.

4.0 SAMPLING AND ANALYTICAL SUMMARY

4.1 Fingerprint Analysis

Investigations into the potential sources of oil being discharged from the outfall identified three potential sources including; (1) the severed underground nestled piping located in the northwest corner of the property, (2) historical oil spills/releases from operations at the Aliquippa Tin Mill including but not limited to two (2) aboveground storage tanks identified in a 1975 photograph, and (3) off-site sources including Route 51 and railroad tracks which are on the west side of the property.

EPA utilized the U.S. Coast Guard Marine Safety Laboratory (USCG MSL) in Groton, Connecticut to conduct fingerprint analysis on samples collected from the potential source areas and spill area while conducting mitigation efforts around the storm drain conveyance system.

On October 17, 2018, START collected three samples to be sent to the USCG MSL. The first sample (ATM-PO-001) was collected from the outfall. The second sample (ATM-PO-002) was collected from the severed nestled pipes which consisted of a composite sample collected from Pipe 3 and Pipe 4. A third sample (ATM-SW-003) was collected from Inlet #14. As required by the USCG MSL, the samples were shipped as dangerous goods on October 18, 2018 and received by the laboratory on October 19, 2018.

An Oil Sample Analysis Report (MSL Case Number 19-004) was received on October 29, 2018 from the USCG MSL and is included in Attachment 3A. The report provides the following results:

- Spill Sample 19-004-1 which was collected at the outfall (ATM-PO-001) contains petroleum oil with characteristics most resembling those of moderately weathered heavy fuel oil
- Suspected source sample 19-004-2 which was collected from the severed nestled piping (ATM-PO-002) contains heavy fuel oil with characteristics somewhat similar to those of spill sample 19-004-1. However, notes that not all differences noted are attributable to weathering.
- Samples 19-004-3 through 19-004-8 which were collected from Inlet #14 (ATM-SW-003) do not contain a quantity of petroleum oil detectable by the analysis conducted.[1]

The conclusion was that the suspected source sample 19-004-2 and spill sample 19-004-1 are not derived from a common source of petroleum oil.

After receiving the fingerprint analysis from USCG MSL on the potential source sample from the nestled piping not matching the spill sample, it was questioned that not all of the severed nestled pipes were sampled and included in the fingerprint analysis. EPA instructed that the remaining nestled pipes be sampled for additional fingerprint analysis. EPA also had samples collected of the oil coming from seeps into the stormwater piping excavation area.

On October 30, 2018, START collected 2 samples (Sample # 009 and 010) from the stormwater conveyance system excavation area. The seeps are believed to be residual oil from past operations at the Site. START also collected 3 samples from the nestled pipes 1, 2 and 4 (Sample # OP1, OP2 and OP4). Samples were shipped as dangerous goods on November 6, 2018 and received by USCG MSL on November 7, 2018.

An Oil Sample Analysis Report (MSL Case Number 19-008) was received on November 26, 2018 from the USCG MSL and is included in Attachment 3A. The report provides the following results:

- Spill Sample 19-004-1 which was collected at the outfall contains petroleum oil with characteristics most resembling those of moderately weathered heavy fuel oil
- Suspected source samples 19-008-1 and 19-008-2 were collected from the excavation area (# 009 and #010) that had been impacted by the seeps. The analysis showed that

[1] It should be noted that the laboratory requires samples to be shipped in 4 oz sample jars. To ensure that the lab had enough sample material for Sample ATM-SW-003, START provided 6-4 oz sample jars which were then assigned laboratory sample numbers 19-004-3 through 19-004-8. Each sample was treated as a discreet sample.

these samples contain heavy fuel oil with characteristics similar to those of spill sample 19-004-1. Differences are attributable to weathering of spilled oil and to slight non-homogeneity in the sampled product.

- Suspected source samples 19-008-3, 19-008-4 and 19-008-5 were collected from the nestled pipes (#OP1, OP2 and OP4). The analysis showed that the samples contain heavy fuel oil with characteristics different from those of spill sample 19-004-1. Differences are not attributable to weathering.

The conclusion was that the suspected source sample 19-008-1 and 19-008-2 and spill sample 19-004-1 were derived from a common source of petroleum oil.

In addition, suspected source sample 19-008-3, 19-008-4 and 19-008-5 and spill sample 19-004-1 were not derived from a common source of petroleum oil.

4.2 Soil Sampling

During the week of November 5, 2018, the OSC decided to move forward with collecting soil samples from underneath sections of the storm water piping to document the extent of residual oil that remained underneath the piping. The OSC and START referenced the PADEP's Closure Requirements for Underground Storage Tanks and Site Assessment Sampling Requirements at Regulated Storage Tank Closure Systems as guidance for testing parameters and action levels. The testing parameters for a #6 heavy fuel oil required Naphthalene, Fluorene, Anthracene, Phenanthrene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(a)pyrene and Benzo(g,h,i)perylene. Based on the listed analytes for testing, START made arrangements through EPA's Office of Analytical Services and Quality Assurance (OASQA) for a CLP laboratory to conduct semivolatile organic compound (SVOC) analysis utilizing EPA's CLP Superfund Organic Method 2.4 (SOM02.4) for organics. A sampling plan was finalized on or about November 26, 2018.

Samples were collected from underneath each 20-foot section of piping being replaced starting at Pipe #11 (220-240 feet) through Pipe #15 (300-320 feet). A total of five (5) samples and one (1) duplicate were collected and sent to Chemtech Consulting Group in Mountainside, NJ for analysis under two submittals on November 29, 2018 and December 17, 2018 respectively. The data was validated by EPA's Environmental Services Assistance Team (ESAT) contractor under the direction of the OASQA Branch. Data were validated according to the National Functional Guidelines for Organic Superfund Methods Data Review and applicable USEPA Region 3 modifications. Data validation packages were received on March 27, 2019.

Samples results are provided in Attachment 3B as well as the Data Validation packages. Samples results were compared against the PADEP's Site Assessment Sampling Requirements at Regulated Storage Tank Closure Systems which specified action levels. For the specific analytes identified in the PADEP's guidance, the analytical results were all below the PADEP saturated soil action levels. The analytical results for the subsurface soil samples were also compared to EPA Regional Removal Management Levels (RMLs) for industrial soil and a Target Hazard

Quotient of 1.0 (EPA, 2019b). The analytical results did not exceed any of the RMLs for the complete list of SVOCs.

5.0 RESOURCES COMMITTED

5.1 Resources committed by the PADEP

PADEP responded to the spill on May 27, 2017 and activated their Emergency Response contractor to install and maintain containment boom and absorbent materials (booms, pads, pigs etc) along the contaminated shoreline to reduce/prevent migration of oil into the Ohio River. On or about June 3, 2017, the EPA FOSC conducted a site visit to observe conditions and determined it appropriate to request funding from the National Pollution Fund Center and issue a Pollution Request Funding Authorization (PRFA) to cover future costs to ensure an effective removal of the discharge or mitigation or prevention of a substantial threat of discharge. On or about June 28, 2017, the FOSC obtained FPN E17309 and issued a PRFA to the PADEP to maintain containment to minimize further migration of oil, determine the source of the oil and remove all contained oil and oiled debris from the impacted shoreline. In October 2017, the PRFA was increase by an additional $50,000 for a total of $90,000 provided to PADEP. At the end of December 2017, PADEP transitioned lead agency to the EPA for continued assessment and removal actions.

PADEP submitted a claim in the approximate amount of $38,000 for the costs associated with their emergency response contracts and a request for $ 65,795.25 for reimbursement of work under the PRFA. Both the reimbursement for the claim and PRFA were processed by the NPFC and are considered complete.

5.2 Initial EPA Funding Request

Following the transition to EPA as the lead agency for the response to the oil on the Ohio River, the OSC requested $120,000 on January 5, 2018 for EPA to continue defensive actions at the outfall to contain discharges of oil and conduct additional assessment work to locate the source of oil entering into a storm drain system located on the property and entering into the Ohio River through the outfall. Total Ceiling is $220,000.

5.3 Additional EPA Funding Requests:

On or about May 7, 2018, the FOSC requested a ceiling increase in the amount of $1,982,536 to conduct the removal activities as outlined in the OPA 90 Work Plan. After discussions with the FOSC, the NPFC authorized an additional $75,000 for EPA to continue with defensive actions including booming and collection measures until further evaluation of the potential responsible parties could be conducted. A ceiling increase in the amount of $75,000 was approved on May 8, 201. Total Ceiling is $295,000.

On or about July 19, 2018, the FOSC submitted an updated OPA 90 Work Plan requesting $2,116,834 to conduct the removal actions necessary to mitigate the discharge of oil and cleanup the impacted areas including the shoreline of the Ohio River. On or about August 9, 2018, the NPFC approved the ceiling increase of $2,116,834. Total ceiling is $2,411,834.

On or about August 28, 2019, the FOSC is requested an additional $60,000 to cover EPA costs (direct and indirect) for the completion of the project. The current available funding is already allocated to the ERRS and START contracts as extramural funds for cleanup. EPA intramurals funding estimates were exceeded when cleanup operations for the first two phases of work took more time than estimated and the unanticipated access negotiations with the railroad. The additional funding of $60,000 was approved on September 6, 2019. Total ceiling is $2,471,834.

5.4 Estimated Total Cost Summary (as of Polrep 14)

		Budgeted	Total to Date	Remaining	% Remaining
Extramural Costs					
	PRFA to PADEP	$66,000.00	$66,000.00	$0.00	0.00%
	ERRS	$1,735,000.00	$1,413,800.00	$321,192.00	18.51%
	START	$134,707.00	$97,660.00	$37,047.00	27.50%
	ESAT	$2,000.00	$1,538.34	$461.66	23.08%
Intramural Costs					
	EPA - Direct	$196,127.00	$121,225.00	$74,902.00	38.19%
	EPA- Indirect	$340,000.00	$251,485.00	$88,515.00	26.03%
Total Site Costs		$2,471,834.00	$1,950,178.00	$521,656.00	21.10%

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

6.0 ROSTER OF AGENCIES, ORGANIZATIONS, AND INDIVIDUALS

6.1 Description of Agency Roles

OSC Deborah Lindsey coordinated with other EPA personnel, federal, state, and local agencies, and directed the daily activities of ERRS and START personnel during the removal activities at the Site. Site costs were tracked by Joanna McCauley, EPA Region III Senior Site Administrative Officer (SSAO).

Mr. Kevin Halloran of the Pennsylvania DEP was the primary Commonwealth representative during the Removal Action.

Weston Solutions was the prime contractor for the START contract for the period of January

2018 through December 2018. Weston Solutions provided technical support, including subcontracting for the magnetometer study and camera survey, multimedia sampling, laboratory services coordination, health and safety oversight, data management and data validation, ERRS contractor monitoring, documentation of Site activities, photo documentation and assisting the OSC with reporting of Site activities.

TechLaw was the prime contractor for the START contract for the period of May 2019 through June 2020. TechLaw provided technical support, including health and safety oversight, data reporting, ERRS contractor monitoring, documentation of Site activities, photo documentation, boat operations and assisting the OSC with reporting of Site activities.

Environmental Restoration LLC was the prime contractor for the ERRS contract who supplied the manpower and equipment necessary to conduct defensive actions at the outfall to contain and collect oil being discharged from the outfall, replace approximately 240 feet of the storm water conveyance system, subcontract to clean the remaining sections of the storm water conveyance system, cleanup of 400 feet of riverbank, arrange for transportation and disposal of contaminated soil and debris, and conduct backfill and restoration of excavated areas.

R.T Environmental Services was the consultant for the Charles J. Betters, property owner of the former Aliquippa Tin Mill property. Under the access agreement, Mr. Betters had a consultant on-site to collect evidence and information regarding the source of the spill and EPA's cleanup actions.

Skelly & Loy Inc. was the consultant for PennDOT, state agency responsible for the contract to install the storm water conveyance system. Through an agreement with the property owner, PennDOT had a consultant on-site to collect evidence and information regarding the source of the spill and EPA's cleanup actions.

6.2 Organization of Response

The following table provides a list of federal, state, and local agencies and contractors involved in this Removal Action. The table also includes a brief description of duties involving this Removal Action.

TABLE 6-1
DESCRIPTION OF AGENCY ROLES

AGENCY	CONTACT	DESCRIPTION OF DUTIES
U.S. EPA Region III 1060 Chapline Street Wheeling, WV 26003 (304) 234-0249	Deborah Lindsey	On-Scene Coordinator: Performed initial assessments. Coordinated all aspects of the project. Responsible for integrating various agencies and contractors and for the overall project completion.

U.S. EPA Region III 1650 Arch Street Philadelphia, PA 19103 (215) 814-3251	Joanna McCauley	EPA Senior Site Administrative Officer (SSAO). Managed and tracked all site costs
U.S. EPA Region III 1650 Arch Street Philadelphia, PA 19103 (215) 814-2623	Lauren Zeigler	Regional Counsel
National Pollution Fund Center U.S. Coast Guard Stop 7605 2703 Martin Luther King JR Ave SE Washington, DC 20593-7605 (202) 795-6082	MSTC Gilbert Mijarez	NPFC Case Officer responsible for overseeing access to the Oil Spill Liability Trust Funds through an assigned federal project number and documenting costs to support cost recovery. Main point of contact for all interested parties regarding the case.
C.J. Betters Enterprises 100 Bet-Tech Drive Aliquippa, PA 15001 (724) 375-6170	Charles J. Betters	Property Owner
Pennsylvania Department of Environmental Protection (PADEP) Southwest Regional Office 400 Waterfront Drive Pittsburgh, PA 15222 (412) 442-4000	Kevin Halloran Don Bialosky John Murphy	Conducted initial emergency response and enforcement actions to the discharge of oil. Once cleanup transitioned to EPA, coordinated with OSC to ensure all issues and/or concerns were addressed.
PA Department of Transportation (PennDOT) Engineering District 11-0 45 Thoms Run Road Bridgeville PA 15017 (412) 429-4858	Mark J. Young	District Environmental Manager. PennDOT was the state office responsible for the installation of the storm water conveyance system located on the property
Genesee & Wyoming Railroad Services 13901 Sutton Park Dr., S., Suite 160 Jacksonville, FL 32224 (904) 900-6286	Donna Killingsworth	Real Estate Manager. Point of Contact for access to the railroad
Aliquippa & Ohio River Railroad (AORR) 47849 Papermill Road Coshocton, Ohio 43812 740-202-0843	Tim Slusser Scott McFarland	Designated AORR officials for communication and coordination of daily operations for the Aliquippa & Ohio River Railroad

Environmental Restoration LLC 1666 Fabick Drive Fenton, Missouri 63026 (636) 227-7477		Response Managers who coordinated or otherwise provided the overall labor, materials, and services to the OSC to conduct booming operations, replace impacted storm water piping to mitigate discharge and clean-up contaminated riverbank.
Weston Solutions EPA START V Contractor 1400 Weston Way 4-2 West Chester, PA 19380 (610) 701-3128		During 2018 activities - Region 3 START. Assisted with oversight of removal activities, written and photographic documentation, media sampling, analytical services coordination, data management, and data validation.
TechLaw, Inc. EPA START V Contractor 2208 Warwood Ave Wheeling, WV 26003 (304) 230-1230		During 2019 activities - Region 3 START. Assisted with oversight of removal activities, written and photographic documentation, mapping and data presentation.
RT Environmental Services, Inc. 215 West Church Road King of Prussia, PA 19406 (610) 804-8657 RT Environmental Services, Inc. 2001 Waterdam Drive, Suite 205 Canonsburg, PA 15317 (724) 206-0348	[redacted]	Environmental consultant on-site to document site conditions and collect evidence for the Property Owner
Skelly and Loy, Inc Engineering & Environmental Consultants 3280 William Pitt Way Pittsburgh, PA 15238 (412) 828-1412	[redacted]	Environmental consultant on-site to document site conditions and collect evidence for PennDOT
WallacePancher Group 1085 S. Hermitage Road Hermitage, PA 16148 (724) 981-0155	[redacted]	Environmental consultant for the Property Owner involved in the initial assessment phase of the response
USCG Marine Safety Lab 1 Chelsea Street New London, CT 06320 (860) 271-2641	Kristy Echols MST2 Shelley Turner	Laboratory Manager. USCG laboratory that conducted the Fingerprint Analysis

Chemtech Consulting Group 284 Sheffield St #1 Mountainside, New Jersey 07092 (908) 789-8900		Laboratory Manager. Lab contracted through EPA DAS Program. Conducted analysis on soil samples from underneath storm water piping
Robinson Pipe Cleaning 2656 Idlewood Road Pittsburgh, PA 15205 (412) 921-2100		Conducted video inspection of the storm water piping to locate leaks. Also conducted vacuuming/jet cleaning of the piping that was not being replaced.
Waste Management American Landfill 7916 Chapel Street SE Waynesburg, Ohio 44688 (330) 866-3265		Landfill for disposal of non-hazardous waste oil-contaminated debris and booming material
Max Environmental - Bulger Facility 200 Max Drive Bulger, PA 15019 (724) 796-1571		Landfill for disposal of non-hazardous waste oil-contaminated soil.

7.0 WASTE TREATMENT AND DISPOSAL

All material from the Site that was transported off-site was classified as non-hazardous waste. Samples were collected from the outfall area and the oil-contaminated soils and submitted for waste characterization with the following analysis; pH, TCLP RCRA metals, Total PCBs, flashpoint, TCLP VOC/SVOCs, % Halogen and BTU. The waste was classified non-hazardous based on the analytical results.

Oil contaminated booming material and debris was staged on-site in roll-offs until filled and then scheduled for pick-up. Five (5) roll-offs of oil-contaminated booming material and debris were taken off-site between May 2018 and February 2019. The roll-offs were transported to Waste Management's American Landfill in Waynesburg, Ohio. A total of 13 tons of the oil contaminated material and debris was disposed of in the five roll-offs.

Oil contaminated soils were staged on-site while waiting waste characterization and selection of a landfill. Once it was determined that the non-hazardous oil contaminated soils could go to the Max Environmental Bulger facility, additional soil samples were required based on the volume of soil scheduled to be sent to the landfill. PADEP required 1 sample for every 750 tons of soil to ensure the level of contamination was consistent from pile to pile. Seven (7) samples were collected from each of the soil piles on-site. The samples were collected and submitted to Test America Pittsburgh for a full set of analysis. Analytical results showed the levels to be within the landfill parameters and approval was received on or about November 12, 2018 to send the oil-contaminated soils to the Max Environmental Bulger landfill. Transportation of 105 shipments of oil contaminated soils took place between November 14, 2018 and December 11, 2018 for a total volume of 2,831.04 tons.

Cleanup of the riverbank generated another five (5) roll-offs of oil contaminated booming material, rocks, sediments and vegetation for a total of 36.58 tons. The material was transported off-site between October 2019 and November 2019 to Waste Management's American Landfill in Waynesburg, Ohio. The last roll-off (0.1 tons) containing lightly oiled containment boom was taken to Waste Management's American Landfill in Waynesburg, Ohio on June 8, 2020.

A description of the non-hazardous waste materials that were removed from the Site, quantities, manifest numbers and disposal facilities are presented in Table 7.1. Copies of the manifests and Certificates of Disposal are located in Attachment 4.

Table 7-1
Waste Disposal Summary

Date Shipped	Waste Stream	Quantity	Manifest No.	Disposal Method	Disposal Facility
05/15/2018	Non-hazardous Oil contaminated soil/debris	3.07 tons	051518	Landfill	Waste Management American Landfill 7916 Chapel Street SE Waynesburg, Ohio 44688
07/26/2018	Non-hazardous Oil contaminated soil/debris	3.24 tons	072618	Landfill	Waste Management American Landfill 7916 Chapel Street SE Waynesburg, Ohio 44688
10/11/2018	Non-hazardous Oil contaminated soil/debris	3.35 tons	101118	Landfill	Waste Management American Landfill 7916 Chapel Street SE Waynesburg, Ohio 44688
11/14/2018	Non-hazardous Oil contaminated soils	27.52 tons	A0001	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/14/2018	Non-hazardous Oil contaminated soils	26.00 tons	A0002	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/14/2018	Non-hazardous Oil contaminated soils	23.84 tons	A0003	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/14/2018	Non-hazardous Oil contaminated soils	28.19 tons	A0004	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019

11/14/2018	Non-hazardous Oil contaminated soils	27.45 tons	A0005	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/14/2018	Non-hazardous Oil contaminated soils	27.31 tons	A0006	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/14/2018	Non-hazardous Oil contaminated soils	26.93 tons	A0007	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/14/2018	Non-hazardous Oil contaminated soils	26.40 tons	A0008	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/14/2018	Non-hazardous Oil contaminated soils	27.30 tons	A0009	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/15/2018	Non-hazardous Oil contaminated soils	27.12 tons	A0010	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/15/2018	Non-hazardous Oil contaminated soils	28.29 tons	A0011	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/15/2018	Non-hazardous Oil contaminated soils	26.88 tons	A0012	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/15/2018	Non-hazardous Oil contaminated soils	26.79 tons	A0013	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/15/2018	Non-hazardous Oil contaminated soils	26.32 tons	A0014	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/15/2018	Non-hazardous Oil contaminated soils	26.73 tons	A0015	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/15/2018	Non-hazardous Oil contaminated soils	27.61 tons	A0016	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019

11/15/2018	Non-hazardous Oil contaminated soils	27.52 tons	A0017	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/15/2018	Non-hazardous Oil contaminated soils	28.67 tons	A0018	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/15/2018	Non-hazardous Oil contaminated soils	29.89 tons	A0019	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/16/2018	Non-hazardous Oil contaminated soils	28.04 tons	A0020	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/16/2018	Non-hazardous Oil contaminated soils	28.94 tons	A0021	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/16/2018	Non-hazardous Oil contaminated soils	27.45 tons	A0022	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/16/2018	Non-hazardous Oil contaminated soils	30.96 tons	A0023	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/16/2018	Non-hazardous Oil contaminated soils	30.08 tons	A0024	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/16/2018	Non-hazardous Oil contaminated soils	26.43 tons	A0025	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/16/2018	Non-hazardous Oil contaminated soils	26.92 tons	A0026	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/16/2018	Non-hazardous Oil contaminated soils	26.86 tons	A0027	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/16/2018	Non-hazardous Oil contaminated soils	20.21 tons	A0028	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019

11/27/2018	Non-hazardous Oil contaminated soils	27.64 tons	A0029	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/27/2018	Non-hazardous Oil contaminated soils	27.10 tons	A0030	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/27/2018	Non-hazardous Oil contaminated soils	25.70 tons	A0031	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/27/2018	Non-hazardous Oil contaminated soils	29.33 tons	A0032	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/27/2018	Non-hazardous Oil contaminated soils	27.41 tons	A0033	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/27/2018	Non-hazardous Oil contaminated soils	27.56 tons	A0034	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/27/2018	Non-hazardous Oil contaminated soils	28.26 tons	A0035	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/27/2018	Non-hazardous Oil contaminated soils	22.11 tons	A0036	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/27/2018	Non-hazardous Oil contaminated soils	27.84 tons	A0037	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/27/2018	Non-hazardous Oil contaminated soils	27.04 tons	A0038	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/27/2018	Non-hazardous Oil contaminated soils	27.22 tons	A0039	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/28/2018	Non-hazardous Oil contaminated soils	27.48 tons	A0040	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019

11/28/2018	Non-hazardous Oil contaminated soils	27.45 tons	A0041	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/28/2018	Non-hazardous Oil contaminated soils	26.60 tons	A0042	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/28/2018	Non-hazardous Oil contaminated soils	27.85 tons	A0043	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/28/2018	Non-hazardous Oil contaminated soils	26.12 tons	A0044	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/28/2018	Non-hazardous Oil contaminated soils	26.53 tons	A0045	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/28/2018	Non-hazardous Oil contaminated soils	27.25 tons	A0046	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/28/2018	Non-hazardous Oil contaminated soils	27.05 tons	A0047	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/28/2018	Non-hazardous Oil contaminated soils	25.14 tons	A0048	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/28/2018	Non-hazardous Oil contaminated soils	26.60 tons	A0049	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/28/2018	Non-hazardous Oil contaminated soils	26.85 tons	A0050	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/28/2018	Non-hazardous Oil contaminated soils	27.77 tons	A0051	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/28/2018	Non-hazardous Oil contaminated soils	27.07 tons	A0052	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019

11/28/2018	Non-hazardous Oil contaminated soils	25.68 tons	A0053	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/29/2018	Non-hazardous Oil contaminated soils	19.40 tons	A0054	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/29/2018	Non-hazardous Oil contaminated soils	27.82 tons	A0055	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/29/2018	Non-hazardous Oil contaminated soils	28.00 tons	A0056	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/29/2018	Non-hazardous Oil contaminated soils	27.29 tons	A0057	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/29/2018	Non-hazardous Oil contaminated soils	26.55 tons	A0058	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/29/2018	Non-hazardous Oil contaminated soils	27.21 tons	A0059	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/29/2018	Non-hazardous Oil contaminated soils	27.30 tons	A0060	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/29/2018	Non-hazardous Oil contaminated soils	26.84 tons	A0061	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/29/2018	Non-hazardous Oil contaminated soils	26.25 tons	A0062	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/29/2018	Non-hazardous Oil contaminated soils	24.02 tons	A0063	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/29/2018	Non-hazardous Oil contaminated soils	26.74 tons	A0064	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019

11/29/2018	Non-hazardous Oil contaminated soils	28.30 tons	A0065	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/29/2018	Non-hazardous Oil contaminated soils	26.53 tons	A0066	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/29/2018	Non-hazardous Oil contaminated soils	29.35 tons	A0067	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/29/2018	Non-hazardous Oil contaminated soils	29.60 tons	A0068	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/29/2018	Non-hazardous Oil contaminated soils	29.04 tons	A0069	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/29/2018	Non-hazardous Oil contaminated soils	29.34 tons	A0070	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/29/2018	Non-hazardous Oil contaminated soils	24.34 tons	A0071	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/29/2018	Non-hazardous Oil contaminated soils	26.95 tons	A0072	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/30/2018	Non-hazardous Oil contaminated soils	26.96 tons	A0073	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/30/2018	Non-hazardous Oil contaminated soils	29.46 tons	A0074	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/30/2018	Non-hazardous Oil contaminated soils	29.90 tons	A0075	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/30/2018	Non-hazardous Oil contaminated soils	22.29 tons	A0076	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019

11/30/2018	Non-hazardous Oil contaminated soils	28.59 tons	A0077	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/30/2018	Non-hazardous Oil contaminated soils	27.00 tons	A0078	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/30/2018	Non-hazardous Oil contaminated soils	27.46 tons	A0079	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/30/2018	Non-hazardous Oil contaminated soils	25.29 tons	A0080	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/30/2018	Non-hazardous Oil contaminated soils	22.64 tons	A0081	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/30/2018	Non-hazardous Oil contaminated soils	24.16 tons	A0082	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/30/2018	Non-hazardous Oil contaminated soils	21.45 tons	A0083	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/30/2018	Non-hazardous Oil contaminated soils	22.95 tons	A0084	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/30/2018	Non-hazardous Oil contaminated soils	30.45 tons	A0085	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/30/2018	Non-hazardous Oil contaminated soils	27.98 tons	A0086	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/30/2018	Non-hazardous Oil contaminated soils	25.47 tons	A0087	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
11/30/2018	Non-hazardous Oil contaminated soils	25.88 tons	A0088	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019

11/30/2018	Non-hazardous Oil contaminated soils	29.25 tons	A0089	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
12/10/2018	Non-hazardous Oil contaminated soils	26.80 tons	A0090	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
12/10/2018	Non-hazardous Oil contaminated soils	28.86 tons	A0091	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
12/10/2018	Non-hazardous Oil contaminated soils	28.96 tons	A0092	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
12/10/2018	Non-hazardous Oil contaminated soils	26.82 tons	A0093	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
12/10/2018	Non-hazardous Oil contaminated soils	27.35 tons	A0094	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
12/10/2018	Non-hazardous Oil contaminated soils	29.23 tons	A0095	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
12/10/2018	Non-hazardous Oil contaminated soils	29.81 tons	A0096	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
12/10/2018	Non-hazardous Oil contaminated soils	27.08 tons	A0097	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
12/10/2018	Non-hazardous Oil contaminated soils	26.19 tons	A0098	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
12/10/2018	Non-hazardous Oil contaminated soils	31.56 tons	A0099	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
12/10/2018	Non-hazardous Oil contaminated soils	30.61 tons	A0100	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019

12/10/2018	Non-hazardous Oil contaminated soils	30.19 tons	A0101	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
12/11/2018	Non-hazardous Oil contaminated soils	29.75 tons	A0102	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
12/11/2018	Non-hazardous Oil contaminated soils	27.88 tons	A0103	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
12/11/2018	Non-hazardous Oil contaminated soils	33.64 tons	A0104	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
12/11/2018	Non-hazardous Oil contaminated soils	30.74 tons	A0105	Landfill	Max Environmental Landfill Bulger Facility 200 Max Drive Bulger, PA 15019
12/12/2018	Non-hazardous Oil contaminated soil/debris	2.45 tons	121218	Landfill	Waste Management American Landfill 7916 Chapel Street SE Waynesburg, Ohio 44688
02/07/2019	Non-hazardous Oil contaminated soil/debris	0.79 tons	020719	Landfill	Waste Management American Landfill 7916 Chapel Street SE Waynesburg, Ohio 44688
10/18/2019	Non-hazardous Oil contaminated soil/debris	7.57 tons	101819	Landfill	Waste Management American Landfill 7916 Chapel Street SE Waynesburg, Ohio 44688
11/13/2019	Non-hazardous Oil contaminated soil/debris	7.90 tons	386868	Landfill	Waste Management American Landfill 7916 Chapel Street SE Waynesburg, Ohio 44688
11/13/2019	Non-hazardous Oil contaminated soil/debris	8.21 tons	386869	Landfill	Waste Management American Landfill 7916 Chapel Street SE Waynesburg, Ohio 44688
11/14/2019	Non-hazardous Oil contaminated soil/debris	5.14 tons	386870	Landfill	Waste Management American Landfill 7916 Chapel Street SE Waynesburg, Ohio 44688
11/14/2019	Non-hazardous Oil contaminated soil/debris	7.76 tons	386871	Landfill	Waste Management American Landfill 7916 Chapel Street SE Waynesburg, Ohio 44688

06/08/2020	Non-hazardous Oiled boom material	0.10 tons	06082020	Landfill	Waste Management American Landfill 7916 Chapel Street SE Waynesburg, Ohio 44688

8.0 ANALYSIS OF ISSUES

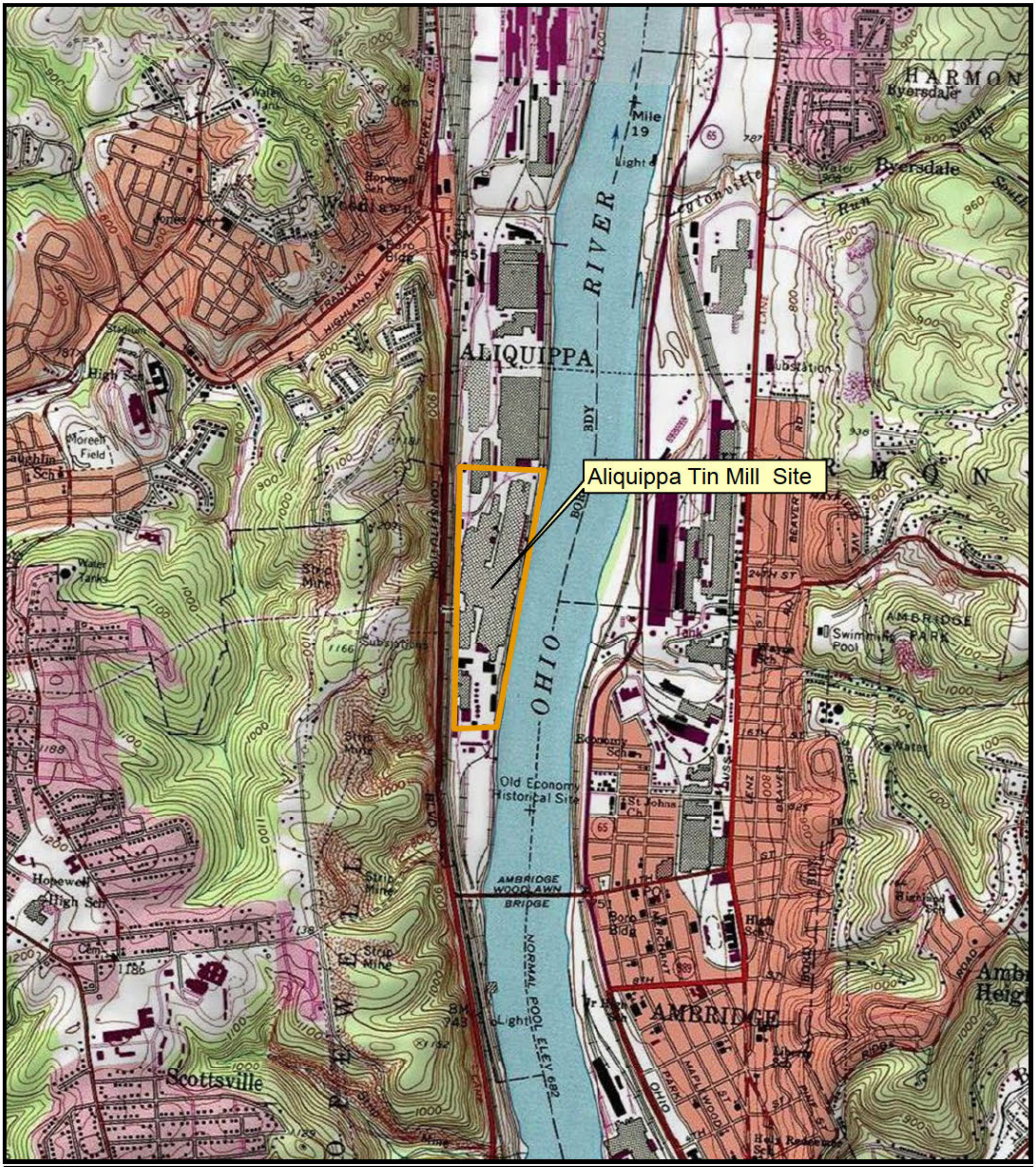
With the completion of the response actions to mitigate the discharge of oil from an outfall associated with the stormwater conveyance system located on property of the former Aliquippa Tin Mill Site, the EPA OSC would like to recognize the following issues encountered during the cleanup activities:

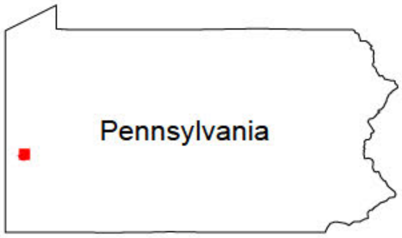
- A discreet source was not discovered while conducting response actions. Early investigations identified a few potential sources including the sheared nestled piping above the area of the storm water conveyance system, a 40 ft x 40 ft anomaly south of the infiltration and aboveground storage tanks located in that area as seen in a 1975 aerial photograph. In addition, the property owner maintained that the oil was coming from an off-site source. Fingerprint analysis indicated that the sheared piping was not the source of the oil. Sampling results of an off-site inlet that the property owner's data showed the presence of oil did not identify oil that could be compared to the oil coming from the outfall. Fingerprint analysis did show that the oil coming from oil seeps within the subsurface soils did match the oil at the outfall. EPA removed as much contaminated soils as possible within the footprint that was accessible. Without a discreet source, EPA mitigated the ability for oil to enter the stormwater system by replacing the damaged stormwater piping and encasing the piping in cement to stop the discharge of oil through the outfall into the Ohio River.

- A full investigation for the source of oil could not be conducted. EPA could not locate any lines south of the work area or the 40 ft x 40 ft anomaly due to restricted access to that area. The property owner had leased the property adjacent to the stormwater system sometime in the Spring/Summer of 2018. A fence was placed approximately 4-5 feet south of the centerline of the stormwater conveyance system which limited any excavation or investigations in that area.

- Cleanup of the shoreline identified a lens of solidified oil at a depth that EPA could not remove. The lens of oil was approximately 2-3 down below clean soils and located along the northern side of the outfall. The lens did not appear to be continuous but was discreet in several areas. The lens of oil was not sheening. EPA could not remove it without heavy equipment. Since the extent of these lens were unknown, it was decided to leave in place as part of the current response actions since it was not causing a sheen. EPA's response actions did effectively remove the oil contaminated soils, debris, sediments and vegetation that were impacted by the oil coming from the storm water conveyance system and discharging from the outfall as discovered in May 2017.

FIGURES





USGS 7.5 Minute Quadrangle
Franklin Pa, 1972, Revised 1973.

N

Coordinate System:
UTM Zone 18N Feet, WGS84

0 2,000
Feet

Aliquippa Tin Mill Site
Aliquippa, Beaver County, PA

Figure 1
Site Location Map

TDD#: W501-18-08-004
Contract: EP-S3-15-02
Date: 11/19/2018

WESTON SOLUTIONS

File: Y:\EPA_Region_III\Aliquippa_Tin_Mills\MXD\Site_Location.mxd, 11/19/2018 10:32:06 AM, johna

Legend

Storm Sewer

Observed Oil Infiltration Points

Sewer Line Blockage

Fence

Oil Line

Storm Sewer Line

Imagery: ESRI Imagery Mapping Service 2017

Coordinate System: WGS84 UTM Zone 18N Feet

N

0 65 130 260 Feet

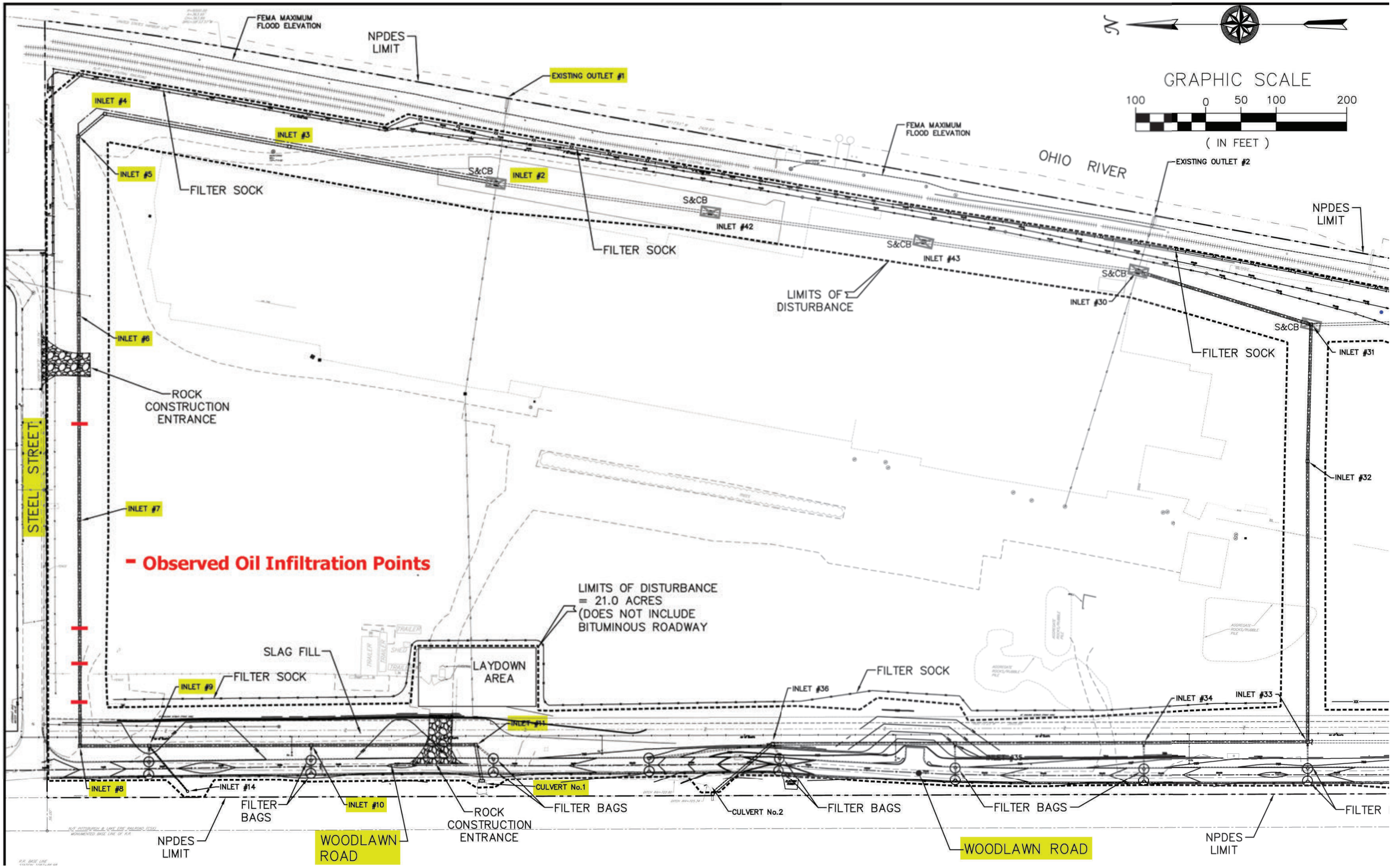
Aliquippa Tin Mills Site
Aliquippa, Beaver County, PA

Figure 3
Oil Infiltration Points and Storm Sewer Lines

TDD#: W
Contract: EP-S3-15-02
Prepared: 10/26/2018

WESTON SOLUTIONS

File: Y:\EPA_Region_III\Aliquippa_Tin_Mills\MXD\AOC_Samp_Maps.mxd 10/26/2018 12:34:40 PM johna



GRAPHIC SCALE
100
0
50
100
200
(IN FEET)
OHIO RIVER
FEMA MAXIMUM FLOOD ELEVATION
NPDES LIMIT
EXISTING OUTLET #1
EXISTING OUTLET #2
INLET #2
INLET #3
INLET #4
INLET #5
INLET #6
INLET #7
INLET #8
INLET #9
INLET #10
INLET #14
INLET #30
INLET #31
INLET #32
INLET #33
INLET #34
INLET #36
INLET #42
INLET #43
S&CB
FILTER SOCK
LIMITS OF DISTURBANCE
ROCK CONSTRUCTION ENTRANCE
STEEL STREET
- Observed Oil Infiltration Points
LIMITS OF DISTURBANCE = 21.0 ACRES (DOES NOT INCLUDE BITUMINOUS ROADWAY
SLAG FILL
LAYDOWN AREA
FILTER BAGS
CULVERT No.1
CULVERT No.2
WOODLAWN ROAD
FILTER

N

BLOOD HOUND
Underground Utility Locators

3242 Farmersville Rd.
Bethlehem, PA 18020
888-858-9830

This map is provided for information purposes only. The Contractor is responsible for locating all utilities prior to commencing site work. PULS, Inc. disclaims all liabilities for damage caused by the execution of site work.

Utilities Legend	
▯	Handhole
⧓	Valve
◐	Meter
O	Manhole
✚	Fire Hydrant
W	Well
✱	Transformer
▮	Sanitary Clean-Out
●	Grate Clean-out
▮	Manhole Inlet
▲	Survey Control Point
+	Test Hole
EOI	End of Electronic Information
H	Duct Bank
I	Duct Bank

Project Location:	Woodlawn Rd & Steel St- Alliquippa, PA	Completed By:	KL
Client:	Weston Solutions WO102903	Scale:	Not to Scale
Date:	2.27.2018	Sheet:	

Red – Electric
Orange – Communications, Telephone/CATV
Blue – Water
Green – Sewer/Drainage
Yellow – Gas/Petroleum Pipe Line
Pink - Unknown
White – Premark site of intended excavation

ATTACHMENT 1

NRC Report

NATIONAL RESPONSE CENTER 1-800-424-8802
GOVERNMENT USE ONLYGOVERNMENT USE ONLY***
Information released to a third party shall comply with any applicable federal and/or state Freedom of Information and Privacy Laws

Incident Report # 1179557

INCIDENT DESCRIPTION

*Report taken by: MST3 STEPHEN COOKE at 08:57 on 28-MAY-17
Incident Type: UNKNOWN SHEEN
Incident Cause: UNKNOWN
Affected Area: OHIO RIVER
Incident was discovered on 27-MAY-17 at 19:15 local incident time.
Affected Medium: WATER TAR LIKE SUBSTANCE ON BANK OF OHIO RIVER

REPORTING PARTY

Name: APRIL WEILAND
Organization: PA DEPT OF ENVIRONMENTAL PROTECTION

PRIMARY Phone: (412)8188420
Type of Organization: STATE GOVERNMENT

SUSPECTED RESPONSIBLE PARTY

Name: UNKNOWN

Type of Organization: UNKNOWN

INCIDENT LOCATION

NEAR AMBRIDGE ALIAPIQUA BRIDGE County: BEAVER

City: AMBRIDGE State: PA Latitude: 40 36' 26" N

Longitude: 080 14' 14" W
UNKNOWN SHEEN INCIDENT

RELEASED MATERIAL(S)

CHRIS Code: OUN Official Material Name: UNKNOWN OIL
Also Known As:
Qty Released: 0 UNKNOWN AMOUNT Qty in Water: 0 UNKNOWN AMOUNT

DESCRIPTION OF INCIDENT

CALLER STATED THAT THEY RECEIVED A REPORT OF AN UNKNOWN MATERIAL ALONG THE SHORE OF THE OHIO RIVER. CALLER STATES THAT THE MATERIAL APPEARS TO BE A TAR LIKE SUBSTANCE WITH A PETROLEUM ODOR.

INCIDENT DETAILS

Platform Rig Name:
Platform Letter:
Location Area ID:
Location Block ID:
OCSG Number:
OCSP Number:
State Lease Number:
Pier Dock Number:
Berth Slip Number:

---SHEEN INFORMATION---
Sheen Color: DARK BLACK
Sheen Odor Description: PETROLEUM SMELL
Sheen Travel Direction:
Sheen Size Length: 500 FEET
Sheen Size Width: 6 FEET
---WATER INFORMATION---
Body of Water: OHIO RIVER
Tributary of:
Nearest River Mile Marker:
Water Supply Contaminated: UNKNOWN

IMPACT

Fire Involved: NO Fire Extinguished: UNKNOWN

INJURIES:	NO	Hospitalized:	Empl/Crew:	Passenger:
FATALITIES:	NO	Empl/Crew:	Passenger:	Occupant:
EVACUATIONS:	NO	Who Evacuated:	Radius/Area:	
Damages:	NO			

Description of Closure | Closed | Closure

Air: N

Road: N

Major Artery: N

Waterway: N

Track: N

Passengers Transferred: NO

Environmental Impact: UNKNOWN
Media Interest: UNKNOWN Community Impact due to Material:

REMEDIAL ACTIONS

Release Secured: UNKNOWN
Release Rate:
Estimated Release Duration:

WEATHER

ADDITIONAL AGENCIES NOTIFIED

Federal: EPA
State/Local: PEMA
State/Local On Scene:
State Agency Number:

NOTIFICATIONS BY NRC

CENTERS FOR DISEASE CONTROL (GRASP)
28-MAY-17 09:04 (770)4887100
CENTERS FOR DISEASE CONTROL (ENVIRONMENTAL HEALTH & EMERGENCY MANAGEMENT)
28-MAY-17 09:04 (770)4880755
DHS NOC (NOC)
28-MAY-17 09:04 (202)2828114
DHS DEFENSE THREAT REDUCTION AGENCY (CHEMICAL AND BIOLOGICAL TECHNOLOGIES DEPAR
28-MAY-17 09:04 (703)7673477
DOT CRISIS MANAGEMENT CENTER (MAIN OFFICE)
28-MAY-17 09:04 (202)3661863
U.S. EPA III (MAIN OFFICE)
01-JUN-17 15:59 LINDSAY
NATIONAL INFRASTRUCTURE COORD CTR (MAIN OFFICE)
28-MAY-17 09:04 (202)2829201
NJ STATE POLICE (MARINE SERVICES BUREAU)
28-MAY-17 09:04 (609)9636900
NOAA RPTS FOR PA (MAIN OFFICE)
28-MAY-17 09:04 (206)5264911
NATIONAL RESPONSE CENTER HQ (AUTOMATIC REPORTS)
28-MAY-17 09:04 (202)2671136
OHIO EMERGENCY MGMT AGENCY (WATCH OFFICE)
28-MAY-17 09:04 (614)7996500
ORSANCO (MAIN OFFICE)
28-MAY-17 09:04 (513)2317719
PA ENVIRONMENTAL PROTECTION AGENCY (EMERGENCY ENVIRONMENTAL RESPONSE)
28-MAY-17 09:04 (717)7875715
PA STATE POLICE (BUREAU OF CRIMINAL INVESTIGATION)
28-MAY-17 09:04 (717)5255260
SECTOR OHIO VALLEY (COMMAND CENTER)
28-MAY-17 09:04 (502)7795424
SECTOR OHIO VALLEY (MSU PITTSBURGH)
28-MAY-17 09:07 (412)6704288 ENS
SECTOR OHIO VALLEY (MSU PITTSBURGH AUTOMATICS)
28-MAY-17 09:04 (412)6704288
OFFICE OF ENV. POLICY & COMPLIANCE (MAIN OFFICE)
28-MAY-17 09:04 (215)5975012
OH EPA ATTN: DUTY OFFICER (MAIN OFFICE)
28-MAY-17 09:04 (614)2240946
PA EMERG MGMT AGCY (MAIN OFFICE)
28-MAY-17 09:04 (717)6512001
USCG DISTRICT 5 (D5 DRAT)
28-MAY-17 09:04 (757)3986231
USCG DISTRICT 8 (MAIN OFFICE)
28-MAY-17 09:04 (504)5896225
WEST VIRGINIA DEP (MAIN OFFICE)
28-MAY-17 09:04 (304)5585938
WV DEP ATTN: DUTY OFFICER (MAIN OFFICE)
28-MAY-17 09:04 (800)6423074
WV DEP SPILL LINE (MAIN OFFICE)
28-MAY-17 09:04 (304)3683960

*** END INCIDENT REPORT # 1179557 ***

Report any problems by calling 1-800-424-8802

PLEASE VISIT OUR WEB SITE AT http://www.nrc.uscg.mil

ATTACHMENT 2

OPA Workplan

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1060 Chapline Street
Wheeling, West Virginia 26003

DATE: July 18, 2018

SUBJECT: OPA 90 Removal Project Plan
Aliquippa Tin Mill Oil Discharge Site (FPN# E17309)
Aliquippa, Beaver County, Pennsylvania

FROM: Deborah Lindsey, OSC Deborah Lindsey
Western Response Branch (3HS32)
Office of Preparedness and Response

TO: MSTC Gilbert Mijarez, Case Officer
United States Coast Guard
National Pollution Funds Center

CC: Bonnie Gross, Associate Director
Office of Preparedness and Response (3HS30)

CC: Portia Perry, National Oil Response Coordinator
Office of Emergency Management (5104A)

I. Background:

FPN: E17309
EPA Site ID: Z3PC
Response Authority: Clean Water Act §311
Removal Funding Authority: OPA 90
State Notification: Pennsylvania Department of Environmental Protection (PADEP)
Date OSLTF Opened: 6/28/2017
Mob Date: 5/28/2017 *
EPA Mob Date: 1/31/2018
Current Project Ceiling: $295,000
Demobilization Date: TBD
Completion Date: TBD
Incident Category: Activities are pursuant to Section 311(c) Federal Water Pollution Control Act (FWPCA), as amended by the Clean Water Act §311, as amended by the Oil Pollution Act of 1990 (OPA), Public Law 101-380, and in accordance with the National Oil and Hazardous Substances Contingency Plan (NCP).

* Mob Date of 5/28/2017 is when the spill was discovered and PADEP was on-scene with their emergency response contractors

II. Site Information and Conditions

A. Site Description and Physical Location

The Site consists of a discharge and the continued substantial threat of additional discharge of heavy fuel oil into the waters and adjoining shoreline of the Ohio River, navigable waters of the United States. The location of the oil discharge noticed herein is from a discharge of an unknown quantity of what appears to be Number 6 Fuel Oil from a 36-inch outfall leading from the former Aliquippa Tin Mill property.

The former J&L Aliquippa Works Tin Mill facility is located in Aliquippa, Beaver County, PA. The property is approximately 78 acres in size with an estimated 3,800 feet of water front on the Ohio River. Oil is discharging from a 36-inch outfall into the Ohio River and has coated the adjacent shoreline for several hundred feet. A demarcation of oil contamination was observed on the bank which tapered from a few inches on the ends to approximately six feet in the middle. Aliquippa Works, a steel manufacturer facility, operated at the Site from 1906 through the 1980's with the Aliquippa Tin Mill contininuing through 2000. The steel mill was dismantled/ demolished after operations ceased. The property has been cleared, graded and all the infrastructure put in place for redevelopment. The property was cleaned up under Pennsylvania's Act 2 regulations and a storm drain system installed around the perimeter of the property to redirect surface water runoff from the upgradient rail line and local highway around the property which then discharges out through the outfall.

The physical location of the former Aliquippa Tin Mill Site begins at the corner of Woodlawn Road and Steel Street in Aliquippa, Beaver County, PA (Parcel 08-05-0101-011). The outfall is located on the bank of the Ohio River at approximately river mile marker 18 near the Ambridge-Aliquippa Bridge. The approximate position of the outfall is Latitude 40.6071866 and Longitude -80.2372549.

B. Description of Threat

A significant discharge of oil from an outfall located on the Ohio River was reported on or about May 27, 2017. Pennsylvania Department of Environmental Protection (PADEP) Emergency Response personnel investigated and documented a large volume of heavy oil, similar in appearance to Number 6 Fuel Oil, was observed coating the bank of the Ohio River for several hundred feet. A demarcation of oil contamination was observed on the bank which tapered from a few inches on the ends to approximately six feet in the middle. A dark oil sheen containing globs of heavy oil extended out approximately 20 feet from the bank. PADEP personnel observed an outfall pipe with heavy oil residue coating the bottom 12 inches of the outfall pipe. The amount of discharge was not certain but oil globules and sheening continued to discharge from the outfall pipe. As of January 2018, the amount of oil being discharged from the outfall has increased. There is a significant amount of oil being collected from inside the storm drain leading to the outfall as well as being contained behind the containment and absorbent booming being managed on-site.

C. Previous Site Actions

On the evening of May 27, 2017, PADEP Emergency Response personnel investigated and documented a large volume of heavy oil observed coating the bank of the Ohio River for several hundred feet. Shoreline conditions and nightfall precluded the PADEP from conducting a full assessment. PADEP utilizied their emergency contracting authority to hire a cleanup contractor to implement defensive actions to contain the oil while conducting efforts to identify the source and responsible party.

PADEP returned on May 28, 2017 to conduct further investigations to locate the source of the oil. The former Aliquippa Tin Mill property showed no visible source of the oil. The property has been cleared and graded and is a empty parcel. A storm drain system was located on the perimeter of the property. A few of the catch baisns did show signs of oil including a visible sheen and fuel odors. PADEP also investigated around the outside of adjacent properties for signs of oil spills or discharges. No visible sources were identified outside on the properties.

On June 3, 2018, EPA's FOSC conducted a preliminary assessment with the PADEP. The FOSC observed sheening and oil globules along the shoreline and additional sheening coming from the outfall. The PADEP identified oil sheening in storm drains leading to the outfall. Given the observation of oil continuing to exit the outfall pipe and confirmation from analytical results that the material was an oil, the FOSC determined it appropriate to request funding from the National Pollution Fund Center and issue a PRFA to cover future costs to ensure an effective removal of the discharge or mitigation or prevention of a substantial threat of discharge.

In July 2017, PADEP coordinated a camera survey of the storm drain system to assess where oil may be where infiltrating the piping. The camera inspection showed oil infiltrating into the storm drain system in four locations on the northern end of the property. Since the property has been cleared and graded, it is believed that there is an underground source associated with historic operations at the Site.

Between June 2017 through November 2017, PADEP continued to maintain absorbent and containment boom at the outfall and along the contaminated shoreline to prevent further migration of oil into the Ohio river while pursuing enforcement actions on the current property owner.

In December 2017, the property owner voluntarily took over booming operations and excavated two test pits near the storm drain where oil was detected during the camera survey. One of the test pits showed four underground pipes crossing over the storm drain. The pipes had been cut and bent slightly upward and crimped. Water and oil was observed coming out of the piping. Contaminated soil was encountered from the cut piping down to the storm drain located at depth of 22 feet. The test pit began filling with oil and water.

In January 2018, PADEP transferred lead to EPA to conduct defensive actions, investigations and cleanup of the oil.

EPA took over defensive action at the beginning of February while conducting a historical background review of the property. A 1975 mylar drawing was obtained of the facility which showed two aboveground storage tanks located on the northern end of the property where the oil has been observed entering into the storm drain piping. Discussions with a local contractor reported that LTV Steel routinely off-loaded No 6 fuel oil from barges.

An underground utility survey of the northern corner of the property identified piping at approx. 3-4 feet below ground surface. The piping was traced going both north and south from the storm drain test pit location and the survey did show where the lines may end. Based on the survey, EPA calculates that there could be approximately 1000 feet of underground piping which could contain 1000 to 1500 gallons of material. The survey also identified a rectangle/oval anomaly directly south of the test pit location near the underground piping. At this time EPA is not sure if the anomaly is -fill material or some type of tank or underground structure.

Since the beginning of February 2018, EPA has been conducting defensive actions at the outfall. An increased amount of oil is being observed coming from the outfall during booming operations. Oil containment measures inside the storm drain at a few of inlets also shows an increase in oil.

II. <u>Response Information</u>

A. Current Situation

There is an on-going discharge of heavy fuel oil from an outfall on the former Aliquippa Tin Mill Site that is entering the Ohio River, navigable waters of the United States and has contaminated several hundred feet of adjacent shoreline. Defensive actions are being taken to contain the oil and also conduct limited removal of the oil from the river and shoreline areas while looking for the source of the oil.

While excavating the test pits in December 2017, underground piping was discovered at approximately 3-4 feet below grade. The underground piping was running north to south and perpendicular to the storm drain system that had been installed sometime in 2016. There were three 8-inch pipes and one smaller diameter pipe. Dark oil and water was documented coming out of the pipes. Soil contamination was observed extending vertically down to the storm drain pipes at 22 feet. Oil was observed seeping from the vertical profile. Groundwater and oil was encountered at 22 feet. Findings suggest that the pipes were cut while installing the storm drain system. The pipes, when encountered in December 2017, were bent slightly upward and lightly crimped. The pipes were cut and capped during the test pit operations.

The amount of oil being discharged at the outfall has increased since the test pit operations were conducted in December 2017. Since other sources of the oil could not be located in and around the area, it is the OSC's conclusion that the oil from the cut piping has been releasing into the soil since 2016 when the storm drain system was installed. The oil infiltrated through the unsaturated zone of the compacted soil until the soil became saturated. The oil then started to seep out of the saturated soils into the storm drain or the oil reached the water table and entering into the storm drain system or a combination of both pathways. It is believed that excavation of the test pits in December 2017 loosened up the compacted ground allowing less restricted movement of the oil in the saturated soils into the storm drain system. The oil then migrates through and potentially under the 1550 feet of storm drain system and discharges at the outfall. A utility survey located and traced the piping running both north and south of the test pits. There is approximately 1000-1500 feet of piping which could contain an estimated 1000 gallons of oil. These conditions will need to be considered in the development of response actions.

Booming operations have continued at the Site since submission on the initial Project Plan in April 2018. Booming operations has been increased to twice a week once the weather became warmer and the oil is more fluid.

B. Proposed Actions

In consideration of the observed increase of discharge from the outfall, the discovery of the cut underground pipes and oil saturated soil within the test pits and no other potential sources of oil located on the site, the OSC recommends moving forward with response actions required to mitigate, abate and eliminate the effects of the discharge and substantial threats of discharge of oil into the Ohio River and adjoining shoreline. The proposed response actions are broken down into three separate phases of work as follows:

Phase 1 – this phase will focus on the removal of approximately 1000-1500 feet of underground piping and any oil contained within, investigation of a 400 sq ft anomaly at the end of one sections of piping, removal of oil contaminated soils in the area of the cut piping and where oil was observed entering into the storm drain system, removal and replacement of impacted sections of 48-inch storm drain pipes and proper disposition of oil-contaminated soil and debris generated by the removal activities. This work will take place in the northern end of the property where oil was observed entering the storm drain. It is estimated that this work includes an estimated 500 feet of the storm drain area.

Phase 2 – evaluate approximately 1200 feet of 48-inch storm drain pipe to determine the extent of contamination within the storm drain pipe and any associated contamination outside the storm drain system. Removal and replace impacted sections of the 48-inch storm drain pipe as necessary. Proper disposition of oil-contaminated soil and materials generated by the removal activities

Phase 3 – cleanup of an estimated 200 feet of shoreline including the removal of all visible oil, contaminated debris, vegetation, impacted soils and restoration of the property to pre-response conditions to the maximum extent possible. Proper disposition of oil-contaminated soil and debris generated by the removal activities. Coordination with the Army Corp of Engineers will be required to determine the complete scope of cleanup and restoration requirements.

The OSC finds that the scope of work and costs associated with the proposed removal response activities required to mitigate, abate and eliminate the effects of the discharge and substantial threats of discharge will be more than the current project ceiling. The costs consider the level of difficulty associated with excavations of the storm drain system to a depth greater than 20 feet, working adjacent to operating facilities, working beside a road with heavy truck traffic and an operating railroad spur as well as the shoreline work in a river with a fluctuating water level and a fleet of barges staged in front of the outfall.

The proposed actions do not address the potential for impacted groundwater by the oil discharge or if the groundwater has been impacted by a secondary source or historical operations. Any impacts to groundwater will be evaluated while conducting the response actions identified in Section III. B – Proposed Actions. The need for additional actions and funding will be evaluated if impacted groundwater is encountered.

C. Enforcement

[redacted]

D. Next Steps

The OSC will continue with defensive actions of boom maintenance and removal of oil were feasible while waiting for approval of funding under this OPA 90 Project Plan. The OSC will be reaching out to the Army Corp of Engineers to determine ACOE requirements for shoreline cleanup and restoration. The EPA will also work with MSU Pittsburgh on any navigation restrictions that may need to be put in place while conducting the shoreline work under Phase III.

IV <u>Estimated Project Cost Information (Funding Requirements):</u>

The information below summarizes the estimated costs for activities necessary to respond to the current situation and are above those costs presently in the FPN and ceiling. The costs are estimated for each phase of work as described under Section III Proposed Actions.

The OSC will coordinate ceiling increases with the USCG-NPFC and EPA HQ to ensure that ceiling increases do not exceed Regional allocations from the applicable Memorandum of Understanding (MOU) between EPA and the USCG, establishing the agreements by which EPA accesses the Oil Spill Liability Trust Fund (OSLTF or the "the Fund"), administered by the USCG-NPFC, in order to carry out oil removal under 33 USC 1321 [Clean Water act CWA) of Federal Water Pollution Control Act (FWPCA)], with the concomitant EPA responsibility to fully account for OSLTF funds and support the NPFC's efforts to recover the Federal government's costs from RP's.

A. Estimated Project Costs Incurred to Date as of July 2018:

	Budgeted	Total To Date	Remaining	% Remaining
Extramural Costs				
PRFA to PADEP	$ 66,000	$ 66,000	$ 0	0 %
EPA Contractor – ERRS	$140,000	$ 30,154	$109,846	78 %
EPA Contractor – START	$ 30,354	$ 10,385	$ 19,969	66 %
Intramural Costs				
USEPA - Direct	$ 27,000	$ 16,792	$ 10,208	38 %
USEPA – InDirect	$ 31,646	$ 8,892	$ 22,754	72 %
Total Site Costs	$295,000	$132,223	$162,777	55 %

B. Estimated Costs for Projected Removal Response Actions

	Current	Phase 1	Phase 2	Phase 3
Extramural Costs				
PRFA to PADEP	$ 66,000	-------	------	-------
EPA Contractor – ERRS	$140,000	$551,467	$401,016	$670,248
EPA Contractor – START	$ 30,354	$ 33,530	$ 22,500	$ 44,500
Intramural Costs				
USEPA - Direct	$ 27,000	$ 36,446	$ 25,484	$ 47,407
USEPA – InDirect	$ 31,646	$ 96,386	$ 69,640	$118,210
Total Site Costs	$295,000	$717,829	$518,640	$880,365

Total Cost - $2,411,834

ATTACHMENT 3

LABORATORY ANALYTICAL RESULTS

ATTACHMENT 3A

FINGERPRINT ANALYSIS

Oil Sample Analysis Report

U. S. EPA Region III
Case Number Z3PC-1

Marine Safety Laboratory
Case Number 19-004

U.S. Department of
Homeland Security

**United States
Coast Guard**

Manager
U.S. Coast Guard
Marine Safety Laboratory

1 Chelsea Street
New London, CT 06320
Phone: (860) 271-2704
Fax: (860) 271-2641

16450
29 Oct 2018

U. S. Environmental Protection Agency
Attn: On-Scene Coordinator
Wheeling Office-Methodist Building
1060 Chapline Street, Suite 303
Wheeling, WV 260032995

Dear On-Scene Coordinator:

The laboratory analysis of this case has been completed and our report is forwarded. The technical data supporting the report (spectrograms and chromatograms) have been archived at our facility and are available upon request. We will maintain the oil samples in refrigerated storage pending final case disposition.

Questions concerning this report or the analytical methods used should be directed to the Supervisor of Analysis.

Kristi Echols
K. ECHOLS

Encl: (1) MSL Report 19-004

United States Coast Guard
Marine Safety Laboratory
Oil Sample Analysis Report
19-004

Requestor: U. S. EPA Region III
Unit Case/Activity Number: Z3PC-1
Received: 19-Oct-18 **Via:** Federal Express 4680 0878 4776

Number Of Samples: 8
Lab ID for Spills: 1, 3, 4, 5, 6, 7, and 8
Lab ID for Sources: 2
Lab ID for Background: n/a

Analysis Methods:

- ☑ GAS CHROMATOGRAPHY (GC)
- ☑ GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS)
- ☐ INFRARED SPECTROSCOPY (IR)

Laboratory's Conclusion (as explained below): NON-MATCH

RESULTS:

1. Samples 19-004-1, 3, 4, 5, 6, 7, and 8 were specified to be representative of spilled oil. Analysis indicates:
A. Sample 19-004-1 contains petroleum oil with characteristics most resembling those of moderately weathered heavy fuel oil.
B. Samples 19-004-3, 4, 5, 6, 7, and 8 do not contain a quantity of petroleum oil detectable by the analysis conducted.

2. Suspected source sample 19-004-2 contains heavy fuel oil with characteristics somewhat similar to those of spill sample 19-004-1. However, not all differences noted are attributable to weathering.

CONCLUSIONS:

1. Suspected source sample 19-004-2 and spill sample 19-004-1 are not derived from a common source of petroleum oil.

2. Spill samples 19-004-3, 4, 5, 6, 7, and 8 do not contain a quantity of petroleum oil detectable by the analysis conducted.

SUPERVISOR OF ANALYSIS K. ECHOLS Kristy Echols **DATE** 29-Oct-18

United States Coast Guard
Marine Safety Laboratory

Oil Spill Identification Analysis
Cost Recovery Documentation

Laboratory Case Number:	19-004
Requestor:	U. S. EPA Region III
Unit Case Number:	Z3PC-1
Number of Samples:	10
Cost Per Sample Prepared:	$20.00
Total Costs of Sample Preparation:	$200.00
Number of Analyses:	22
Cost Per Sample Analyzed:	$86.00
Total Costs for Analysis:	$1,892.00
TOTAL COSTS:	$2,092.00

This documentation is provided for purposes of Phase IV - Documentation and Cost Recovery under the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300)

Signature: Kristy Echols **Date:** 29 Oct 2018

United States Coast Guard
Marine Safety Laboratory Sample
Check-In Log

MSL Case/Activity Number: 19-004

Requestor: U. S. EPA Region III **Unit Case Number:** Z3PC-1

Federal Project Number: E17309 **Delivery Method:** Federal Express

Received Date: 19 Oct 18 **Delivery Number:** 4680 0878 4776

Priority: No **Rush:** No **Comparison:** No

Lab ID 19-004	Sample Descriptions from Sample Jars	Spill	Source
1	001 Z3PC-1 PETROLEUM PRODUCT AND WATER 10/17/18 13:30	☑	☐
2	002 Z3PC-1 PETROLEUM PRODUCT 10/17/18 14:05	☐	☑
3	003 Z3PC-1 SURFACE WATER 10/17/18 14:20	☑	☐
4	003 Z3PC-1 SURFACE WATER 10/17/18 14:20	☑	☐
5	003 Z3PC-1 SURFACE WATER 10/17/18 14:20	☑	☐
6	003 Z3PC-1 SURFACE WATER 10/17/18 14:20	☑	☐
7	003 Z3PC-1 SURFACE WATER 10/17/18 14:20	☑	☐
8	003 Z3PC-1 SURFACE WATER 10/17/18 14:20	☑	☐
9		☐	☐
10		☐	☐

Remarks:

Samples checked in by:	MST1 LINDSAY LOGRECO L. a. L	**Date:**	19 Oct 18
Sample Custodian:	MST2 SHELLEY TURNER Shelley Turner	**Date:**	23 OCT 18
Supervisor of Analysis:	K. ECHOLS Kristy Echols	**Date:**	29 Oct 18

Oil Sample Analysis Report

U. S. EPA Region III
Case Number Z3PC-2

Marine Safety Laboratory
Case Number 19-008

U.S. Department of
Homeland Security

**United States
Coast Guard**

Manager
U.S. Coast Guard
Marine Safety Laboratory

1 Chelsea Street
New London, CT 06320
Phone: (860) 271-2704
Fax: (860) 271-2641

16450
26 Nov 2018

U. S. Environmental Protection Agency
Attn: On-Scene Coordinator
Wheeling Office-Methodist Building
1060 Chapline Street, Suite 303
Wheeling, WV 260032995

Dear On-Scene Coordinator:

The laboratory analysis of this case has been completed and our report is forwarded. The technical data supporting the report (spectrograms and chromatograms) have been archived at our facility and are available upon request. We will maintain the oil samples in refrigerated storage pending final case disposition.

Questions concerning this report or the analytical methods used should be directed to the Supervisor of Analysis.

Kristy Echols
K. ECHOLS

Encl: (1) MSL Report 19-008

United States Coast Guard
Marine Safety Laboratory
Oil Sample Analysis Report
19-008

Requestor: U. S. EPA Region III

Unit Case/Activity Number: Z3PC-2

Received: 07-Nov-18 **Via:** Federal Express 4680 0878 4798

Number Of Samples: 5

Lab ID for Spills: n/a

Lab ID for Sources: 1, 2, 3, 4, and 5

Lab ID for Background: n/a

Analysis Methods:

- ☑ GAS CHROMATOGRAPHY (GC)
- ☑ GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS)
- ☐ INFRARED SPECTROSCOPY (IR)

Laboratory's Conclusion (as explained below): MATCH

SPECIAL INSTRUCTIONS: Compare to MSL Case 19-004. Spill sample 19-004-1 was reanalyzed for comparison purposes.

RESULTS:

1. Sample 19-004-1 was specified to be representative of spilled oil. Analysis indicates this sample contains petroleum oil with characteristics most resembling those of moderately weathered heavy fuel oil.

2. Suspected source samples 19-008-1 and 2 contain heavy fuel oil with characteristics similar to those of spill sample 19-004-1. Differences are attributable to weathering of spilled oil and to slight non-homogeneity in the sampled product.

3. Suspected source samples 19-008-3, 4, and 5 contain heavy fuel oil with characteristics different from those of spill sample 19-004-1. Differences are not attributable to weathering.

CONCLUSIONS:

1. Suspected source samples 19-008-1 and 2 and spill sample 19-004-1 are derived from a common source of petroleum oil.

2. Suspected source samples 19-008-3, 4, and 5 and spill sample 19-004-1 are not derived from a common source of petroleum oil.

SUPERVISOR OF ANALYSIS K. ECHOLS Kristy Echols **DATE** 26-Nov-18

United States Coast Guard
Marine Safety Laboratory

Oil Spill Identification Analysis
Cost Recovery Documentation

Laboratory Case Number:	19-008
Requestor:	U. S. EPA Region III
Unit Case Number:	Z3PC-2
Number of Samples:	6
Cost Per Sample Prepared:	$20.00
Total Costs of Sample Preparation:	$120.00
Number of Analyses:	16
Cost Per Sample Analyzed:	$86.00
Total Costs for Analysis:	$1,376.00
TOTAL COSTS:	$1,496.00

This documentation is provided for purposes of Phase IV - Documentation and Cost Recovery under the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300)

Signature: Kristy Echols **Date:** 26 Nov 2018

United States Coast Guard
Marine Safety Laboratory Sample
Check-In Log

MSL Case/Activity Number: 19-008

Requestor: U. S. EPA Region III **Unit Case Number:** Z3PC-2

Federal Project Number: E17309 **Delivery Method:** Federal Express

Received Date: 07 Nov 18 **Delivery Number:** 4680 0878 4798

Priority: No **Rush:** No **Comparison:** Yes

Lab ID 19-008	Sample Descriptions from Sample Jars	Spill	Source
1	009 Z3PC-1 PETROLEUM PRODUCT 10/30/18 11:10	☐	☑
2	010 Z3PC-1 PETROLEUM PRODUCT 10/30/18 11:05	☐	☑
3	0P1 Z3PC-1 PETROLEUM PRODUCT 11/01/18 12:00	☐	☑
4	0P2 Z3PC-1 PETROLEUM PRODUCT 11/1/18 12:05	☐	☑
5	0P4 Z3PC-1 PETROLEUM PRODUCT 11/01/18 12:10	☐	☑
6		☐	☐
7		☐	☐
8		☐	☐
9		☐	☐
10		☐	☐

Remarks: Compare to case 19-004.

Samples checked in by:	MST3 DUSTIN SKVASIK Dustin Skvasik	**Date:**	07 Nov 18
Sample Custodian:	MST2 SHELLEY TURNER Shelley Turner	**Date:**	08 NOV 2018
Supervisor of Analysis:	K. ECHOLS Kristy Echols	**Date:**	26 NOV 18

United States Coast Guard
Marine Safety Laboratory Sample Check-In Log

MSL Case/Activity Number: 19-004

Requestor: U. S. EPA Region III

Unit Case Number: Z3PC-1

Federal Project Number: E17309

Delivery Method: Federal Express

Received Date: 19 Oct 18

Delivery Number: 4680 0878 4776

Priority: No **Rush:** No **Comparison:** No

Lab ID 19-004	Sample Descriptions from Sample Jars	Spill	Source
1	001 Z3PC-1 PETROLEUM PRODUCT AND WATER 10/17/18 13:30	☑	☐
2	002 Z3PC-1 PETROLEUM PRODUCT 10/17/18 14:05	☐	☑
3	003 Z3PC-1 SURFACE WATER 10/17/18 14:20	☑	☐
4	003 Z3PC-1 SURFACE WATER 10/17/18 14:20	☑	☐
5	003 Z3PC-1 SURFACE WATER 10/17/18 14:20	☑	☐
6	003 Z3PC-1 SURFACE WATER 10/17/18 14:20	☑	☐
7	003 Z3PC-1 SURFACE WATER 10/17/18 14:20	☑	☐
8	003 Z3PC-1 SURFACE WATER 10/17/18 14:20	☑	☐
9		☐	☐
10		☐	☐

Remarks:

Samples checked in by: MST1 LINDSAY LOGRECO [signature] **Date:** 19 Oct 18

Sample Custodian: MST2 SHELLEY TURNER Shelley Turner **Date:** 23 OCT 18

Supervisor of Analysis: K. ECHOLS Kristy Echols **Date:** 29 Oct 18

ATTACHMENT 3B

SOIL SAMPLING RESULTS

Table 4.2 - Sampling and Analytical Summary
Soil Sampling Results
Aliquippa Tin Mill Site

Result > Benchmarks A, B
Result > Benchmark A Only
Result > Benchmark B Only

			CLP Sample Number	C5AA0			C5AA1			C5AA2			C5AA3			C5AA4			C5AA5		
			Sample #	ATM-001			ATM-002			ATM-003			ATM-004			ATM-005			ATM-006		
			Sampling Location	Pipe Section 11			Pipe Section 12			Pipe Section 13			Pipe Section 13			Pipe Section 14			Pipe Section 15		
			Sample Type	Field Sample			Field Sample			Field Sample			Field Sample			Field Sample			Field Sample		
			Matrix	Soil			Soil			Soil			Soil			Soil			Soil		
			Units	ug/kg			ug/kg			ug/kg			ug/kg			ug/kg			ug/kg		
			Date Sampled	11/28/2018			11/28/2018			12/11/2018			12/11/2018			12/12/2018			12/14/2018		
			Date Analyzed	12/11/2018			12/11/2018			12/22/2018			12/22/2018			12/22/2018			12/21/2018		
		A	B																		
Parameter	CAS No.	PADEP So l Action Levels	RML HQ=1.0 Ind. Soil ug/kg	Result	Flag	QL	Result	Flag	QL	Result	Flag	QL	Result	Flag	QL	Result	Flag	QL	Result	Flag	QL
1,2,4,5-TETRACHLOROBENZENE	95-94-3		350000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
1,4-Dioxane (P-Dioxane)	123-91-1		2400000	-----	U	83	-----	U	79	-----	U	75	-----	U	75	-----	U	78	-----	U	83
2,3,4,6-TETRACHLOROPHENOL	58-90-2		25000000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
2,4,5-TRICHLOROPHENOL	95-95-4		82000000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
2,4,6-TRICHLOROPHENOL	88-06-2		820000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
2,4-DICHLOROPHENOL	120-83-2		2500000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
2,4-DIMETHYLPHENOL	105-67-9		16000000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
2,4-DINITROPHENOL	51-28-5		1600000	410	R	410	390	R	390	370	UJ	370	370	R	370	380	R	380	410	R	410
2,4-DINITROTOLUENE	121-14-2		740000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
2,6-DINITROTOLUENE	606-20-2		150000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
2-CHLORONAPHTHALENE	91-58-7		60000000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
2-CHLOROPHENOL	95-57-8		5800000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
2-Methylnaphthalene	91-57-6		3000000	-----	U	210	62	J	200	-----	U	190	-----	U	190	89	J	200	71	J	210
2-METHYLPHENOL (O-CRESOL)	95-48-7		41000000	-----	U	410	-----	U	390	-----	U	370	-----	U	370	-----	U	380	-----	U	410
2-NITROANILINE	88-74-4		8000000	210	R	210	200	R	200	-----	U	190	190	R	190	200	R	200	210	R	210
2-NITROPHENOL	88-75-5			-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
3,3'-DICHLOROBENZIDINE	91-94-1		510000	-----	U	410	-----	U	390	-----	U	370	-----	U	370	-----	U	380	-----	U	410
3-NITROANILINE	99-09-2			410	R	410	390	R	390	-----	U	370	370	R	370	380	R	380	410	R	410
4,6-DINITRO-2-METHYLPHENOL	534-52-1		66000	410	R	410	390	R	390	370	R	370	370	R	370	380	R	380	410	R	410
4-BROMOPHENYL PHENYL ETHER	101-55-3			-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
4-CHLORO-3-METHYLPHENOL	59-50-7		82000000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
4-CHLOROANILINE	106-47-8		1100000	-----	U	410	-----	U	390	-----	U	370	-----	U	370	-----	U	380	-----	U	410
4-CHLOROPHENYL PHENYL ETHER	7005-72-3			-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
4-METHYLPHENOL (P-CRESOL)	106-44-5		82000000	-----	U	410	-----	U	390	-----	U	370	-----	U	370	-----	U	380	-----	U	410
4-Nitroaniline	100-01-6		3300000	410	R	410	390	R	390	-----	U	370	370	R	370	380	R	380	410	R	410
4-NITROPHENOL	100-02-7			410	R	410	390	R	390	-----	U	370	370	R	370	380	R	380	410	R	410
Acenaphthene	83-32-9		45000000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
ACENAPHTHYLENE	208-96-8			-----	U	210	77	J	200	-----	U	190	-----	U	190	-----	U	200	55	J	210
Acetophenone	98-86-2		120000000	-----	U	410	-----	U	390	-----	U	370	-----	U	370	-----	U	380	-----	U	410
ANTHRACENE	120-12-7	35000	230000000	-----	U	210	110	J	200	-----	U	190	-----	U	190	-----	U	200	84	J	210
ATRAZINE	1912-24-9		1000000	-----	U	410	-----	U	390	-----	U	370	-----	U	370	-----	U	380	-----	U	410
BENZALDEHYDE	100-52-7		82000000	-----	U	410	-----	U	390	-----	U	370	-----	U	370	-----	U	380	-----	U	410
BENZO(A)ANTHRACENE	56-55-3	2800 / 43000	2100000	70	J	210	340		200	-----	U	190	-----	U	190	66	J	200	490		210
BENZO(A)PYRENE	50-32-8	580 / 4600	210000	-----	U	210	290		200	-----	U	190	-----	U	190	54	J	200	480		210
Benzo(B)Fluoranthene	205-99-2	2600 / 17000	2100000	-----	U	210	-----	U	200	48	J	190	47	J	190	-----	U	200	490		210
Benzo(G,H,I)Perylene	191-24-2	18000		59	J	210	210		200	-----	U	190	-----	U	190	-----	U	200	380		210
Benzo(K)Fluoranthene	207-08-9		21000000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	190	J	210
BENZYL BUTYL PHTHALATE	85-68-7		120000000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
BIPHENYL (DIPHENYL)	92-52-4		200000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
BIS(2-CHLOROETHOXY) METHANE	111-91-1		2500000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
BIS(2-CHLOROETHYL) ETHER (2-CHLORO	111-44-4		100000	-----	U	410	-----	U	390	-----	U	370	-----	U	370	-----	U	380	-----	U	410
BIS(2-CHLOROISOPROPYL) ETHER	108-60-1		47000000	-----	U	410	-----	U	390	-----	U	370	-----	U	370	-----	U	380	-----	U	410
BIS(2-ETHYLHEXYL) PHTHALATE	117-81-7		16000000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
Caprolactam	105-60-2		400000000	-----	U	410	-----	U	390	-----	U	370	-----	U	370	-----	U	380	-----	U	410
CARBAZOLE	86-74-8			-----	U	410	-----	U	390	-----	U	370	-----	U	370	-----	U	380	-----	U	410
CHRYSENE	218-01-9	23000	210000000	130	J	210	510		200	43	J	190	-----	U	190	95	J	200	780		210
DIBENZ(A,H)ANTHRACENE	53-70-3		210000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	87	J	210
Dibenzofuran	132-64-9		1000000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
Diethyl Phthalate	84-66-2		660000000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210

Table 4.2 - Sampling and Analytical Summary
Soil Sampling Results
Aliquippa Tin Mill Site

Result > Benchmarks A, B			CLP Sample Number	C5AA0			C5AA1			C5AA2			C5AA3			C5AA4			C5AA5		
Result > Benchmark A Only			Sample #	ATM-001			ATM-002			ATM-003			ATM-004			ATM-005			ATM-006		
Result > Benchmark B Only			Sampling Location	Pipe Section 11			Pipe Section 12			Pipe Section 13			Pipe Section 13			Pipe Section 14			Pipe Section 15		
			Sample Type	Field Sample			Field Sample			Field Sample			Field Sample			Field Sample			Field Sample		
			Matrix	Soil			Soil			Soil			Soil			Soil			Soil		
			Units	ug/kg			ug/kg			ug/kg			ug/kg			ug/kg			ug/kg		
			Date Sampled	11/28/2018			11/28/2018			12/11/2018			12/11/2018			12/12/2018			12/14/2018		
			Date Analyzed	12/11/2018			12/11/2018			12/22/2018			12/22/2018			12/22/2018			12/21/2018		
		A	B																		
Parameter	CAS No.	PADEP So l Action Levels	RML HQ=1.0 Ind. Soil ug/kg	Result	Flag	QL	Result	Flag	QL	Result	Flag	QL	Result	Flag	QL	Result	Flag	QL	Result	Flag	QL
DIMETHYL PHTHALATE	131-11-3			140	J	210	110	J	200	240		190	150	J	190	330		200	220		210
Di-N-Butyl Phthalate	84-74-2		82000000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
DI-N-OCTYLPHTHALATE	117-84-0		8200000	-----	U	410	-----	U	390	-----	U	370	-----	U	370	-----	U	380	-----	U	410
FLUORANTHENE	206-44-0		30000000	69	J	410	520		390	39	J	370	-----	U	370	60	J	380	490		410
FLUORENE	86-73-7	340000 / 380000	30000000	-----	U	210	53	J	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
HEXACHLOROBENZENE	118-74-1		96000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
Hexachlorobutadiene	87-68-3		530000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
HEXACHLOROCYCLOPENTADIENE	77-47-4		7500	-----	U	410	-----	U	390	370	UJ	370	370	UJ	370	380	UJ	380	410	UJ	410
HEXACHLOROETHANE	67-72-1		460000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
INDENO(1,2,3-C,D)PYRENE	193-39-5		2100000	-----	U	210	140	J	200	-----	U	190	-----	U	190	-----	U	200	200	J	210
ISOPHORONE	78-59-1		160000000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
Naphthalene	91-20-3	10000	590000	-----	U	210	86	J	200	-----	U	190	-----	U	190	40	J	200	120	J	210
NITROBENZENE	98-95-3		1300000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
N-NITROSODI-N-PROPYLAMINE	621-64-7		33000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
N-NITROSODIPHENYLAMINE	86-30-6		47000000	-----	U	210	-----	U	200	-----	U	190	-----	U	190	-----	U	200	-----	U	210
PENTACHLOROPHENOL	87-86-5		400000	-----	U	410	-----	U	390	-----	U	370	-----	U	370	-----	U	380	-----	U	410
PHENANTHRENE	85-01-8	1000000		76	J	210	520		200	-----	U	190	-----	U	190	87	J	200	300		210
PHENOL	108-95-2		250000000	180	J	410	150	J	390	76	J	370	74	J	370	80	J	380	91	J	410
PYRENE	129-00-0	220000	23000000	320		210	1100		200	84	J	190	88	J	190	250		200	2300		210

J - The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
R - The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample
U -The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
UJ -The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
Environmental Sciences Center
701 Mapes Road
Fort Meade, Maryland 20755-5350

DATE: 3/27/2019

SUBJECT: Region III Data QA Review

FROM: Brandon McDonald
Region III ESAT RPO (3EA22)

TO: DEBORAH LINDSEY
Hazardous Site Cleanup Division (HSCD)

Attached is the data validation report for the ALIQUIPPA TIN MILL SITE site for DAS# R35483; SDG# C5AA0 completed by the Region III Environmental Services Assistance Team (ESAT) contractor, ICF International, under the direction of Region III EAID.

If you have any questions regarding this review, please call Brandon McDonald at (410) 305-2607 or you can call Eric Graybill at (410)-305-2665.

Attachment

cc: [redacted] WESTON SOLUTIONS)
[redacted] WESTON SOLUTIONS)

TO: #0002 TDF: #0219036

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ICF
ESAT Region 3
US Environmental Protection Agency Environmental Science Center
701 Mapes Road   Ft. Meade, MD 20755-5350
Phone 410-305-3012

Date: March 18, 2019

To: Brandon McDonald
ESAT Region 3 Project Officer

From: [redacted]
Validator

[redacted]
Reviewer

Subject: Organic Data Validation (S4VM)
Aliquippa Tin Mill
R35483 C5AA0

Overview

This data package consisted of two (2) soil samples analyzed for semivolatile target analytes.

Analyses were performed by Chemtech Consulting Group. The samples were submitted to the laboratory directly by the sampling contractor. The laboratory indicated analyses were performed according to the Contract Laboratory Program (CLP) Statement of Work (SOW) SOM02.4.

Data were validated according to the National Functional Guidelines for Organic Superfund Methods Data Review and applicable USEPA Region 3 modifications. The validation report has been assigned the Superfund Data Validation Label S4VM (Stage_4 _Validation_Manual).

The following validation narrative is an evaluation of laboratory reported data based on the electronic data package received by Region 3 on February 07, 2019.

Summary

Significant data quality outliers regarding Deuterated Monitoring Compound (DMC) recoveries were identified that resulted in rejection of sample results. Less significant data quality outliers were identified resulting in estimation of sample results including, but not limited to, calibration precision as detailed below.

Major Problem

Percent recoveries for the following DMCs were < 10% for the samples listed below. Affected analytes were non-detect in the associated samples. Quantitation limits have been rejected and qualified “R”.

DMC	Affected Samples
4-Nitrophenol-d4	C5AA0, C5AA1
4,6-Dinitro-2-methylphenol-d2	C5AA0, C5AA1

Minor Problem

Target analytes acetophenone and N-nitroso-di-n-propylamine in closing CCV standard VSTD020385 and 2,4-dinitrophenol in closing CCV standard VSTD02088 exceeded the %D criteria. The associated samples and method blank were non-detect for these analytes. Non-detects are estimated and have been qualified “UJ” unless superseded by “R”.

Notes

Target analytes detected at concentrations below Contract Required Quantitation Limits (CRQLs) are estimated and have been qualified “J”.

The method blank was free from contamination.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) were not analyzed.

Manual integrations were performed and identified by the laboratory. A subset of these was evaluated by the reviewer and found to be accurate and consistent. No action was taken by the reviewer based on manual integrations.

Tentatively Identified Compounds (TICs) are not reviewed by data validators. The validation qualifiers are applied by EXES electronic validation based on laboratory qualifiers. By definition, all compounds identified as TICs should be treated as tentative identifications and all reported results should be considered estimated.

Glossary of Organic Data Qualifier Codes

Validation Qualifiers	In order of descending precedence. Only one of these qualifiers may apply to any result.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
U	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.

Additional Qualifiers	Additional qualifiers may be combined with other qualifiers.
N	The analyte has been “tentatively identified” or “presumptively” as present.
B	The result is presumed a blank contaminant. This qualifier is used for drinking water samples only.
C	The target Pesticide or Aroclor analyte identification has been confirmed by Gas Chromatography/Mass Spectrometry (GC/MS). This qualifier may be added to other qualifiers.
X	The target Pesticide or Aroclor analyte identification was not confirmed when GC/MS analysis was performed. This qualifier may be added to other qualifiers.

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

EPA SAMPLE NO.: C5AA0

Lab Name : Chemtech Consulting Group
Contract : EPW14030
Lab Code: CHM
Case No.: R35483
MA No. :
SDG No.: C5AA0
Analytical Method : SVOA
Level : LOW
Matrix : Soil
Lab Sample ID : J6161-01
Sample wt/vol : 30.1 (g/mL): g
Lab File ID : BM018045.D
% Solids : 80.1
Date Received : 11/30/2018
GC Column : ZB-GR ID : 0.25 (mm)
Date Extracted : 12/03/2018
GC Column : ID : (mm)
Date Analyzed : 12/11/2018
Extract Concentrated : (Y / N) Y
Extract Volume : 500 (µL)
Soil Aliquot (VOA) : (µL)
Extraction Type : SOXH
Heated Purge : (Y / N)
Injection Volume : 1.0 (µL)
Purge Volume : (mL)
pH :
Dilution Factor : 1.0
Cleanup Types : GPC
Cleanup Factor : 2.0
Concentration Units (µg/L,mg/L,µg/kg): µg/kg

CAS NO.	ANALYTE	CONCENTRATION	Q
123-91-1	1,4-Dioxane	83	U
100-52-7	Benzaldehyde	410	U
108-95-2	Phenol	180	J
111-44-4	Bis(2-Chloroethyl)ether	410	U
95-57-8	2-Chlorophenol	210	U
95-48-7	2-Methylphenol	410	U
108-60-1	2,2-oxybis(1-Chloropropane)	410	U
98-86-2	Acetophenone	410	U
106-44-5	4-Methylphenol	410	U
621-64-7	N-Nitroso-di-n-propylamine	210	U
67-72-1	Hexachloroethane	210	U
98-95-3	Nitrobenzene	210	U
78-59-1	Isophorone	210	U
88-75-5	2-Nitrophenol	210	U
105-67-9	2,4-Dimethylphenol	210	U
111-91-1	Bis(2-Chloroethoxy)methane	210	U
120-83-2	2,4-Dichlorophenol	210	U
91-20-3	Naphthalene	210	U
106-47-8	4-Chloroaniline	410	U
87-68-3	Hexachlorobutadiene	210	U
105-60-2	Caprolactam	410	U
59-50-7	4-Chloro-3-methylphenol	210	U
91-57-6	2-Methylnaphthalene	210	U
77-47-4	Hexachlorocyclopentadiene	410	U
88-06-2	2,4,6-Trichlorophenol	210	U

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

EPA SAMPLE NO.: C5AA0

Lab Name : Chemtech Consulting Group
Contract : EPW14030
Lab Code: CHM
Case No.: R35483
MA No. :
SDG No.: C5AA0
Analytical Method : SVOA
Level : LOW
Matrix : Soil
Lab Sample ID : J6161-01
Sample wt/vol : 30.1 (g/mL): g
Lab File ID : BM018045.D
% Solids : 80.1
Date Received : 11/30/2018
GC Column : ZB-GR ID : 0.25 (mm)
Date Extracted : 12/03/2018
GC Column : ID : (mm)
Date Analyzed : 12/11/2018
Extract Concentrated : (Y / N) Y
Extract Volume : 500 (µL)
Soil Aliquot (VOA) : (µL)
Extraction Type : SOXH
Heated Purge : (Y / N)
Injection Volume : 1.0 (µL)
Purge Volume : (mL)
pH :
Dilution Factor : 1.0
Cleanup Types : GPC
Cleanup Factor : 2.0
Concentration Units (µg/L,mg/L,µg/kg): µg/kg

CAS NO.	ANALYTE	CONCENTRATION	Q
95-95-4	2,4,5-Trichlorophenol	210	U
92-52-4	1,1-Biphenyl	210	U
91-58-7	2-Chloronaphthalene	210	U
88-74-4	2-Nitroaniline	210	~~U~~ R
131-11-3	Dimethylphthalate	140	J
606-20-2	2,6-Dinitrotoluene	210	U
208-96-8	Acenaphthylene	210	U
99-09-2	3-Nitroaniline	410	~~U~~ R
83-32-9	Acenaphthene	210	U
51-28-5	2,4-Dinitrophenol	410	~~U~~ R
100-02-7	4-Nitrophenol	410	~~U~~ R
132-64-9	Dibenzofuran	210	U
121-14-2	2,4-Dinitrotoluene	210	U
84-66-2	Diethylphthalate	210	U
86-73-7	Fluorene	210	U
7005-72-3	4-Chlorophenyl-phenylether	210	U
100-01-6	4-Nitroaniline	410	~~U~~ R
534-52-1	4,6-Dinitro-2-methylphenol	410	~~U~~ R
86-30-6	N-Nitrosodiphenylamine	210	U
95-94-3	1,2,4,5-Tetrachlorobenzene	210	U
101-55-3	4-Bromophenyl-phenylether	210	U
118-74-1	Hexachlorobenzene	210	U
1912-24-9	Atrazine	410	U
87-86-5	Pentachlorophenol	410	U
85-01-8	Phenanthrene	76	J

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

EPA SAMPLE NO.

C5AA0

Lab Name : Chemtech Consulting Group Contract : EPW14030

Lab Code: CHM Case No.: R35483 MA No. : SDG No.: C5AA0

Analytical Method : SVOA Level : LOW

Matrix : Soil Lab Sample ID : J6161-01

Sample wt/vol : 30.1 (g/mL): g Lab File ID : BM018045.D

% Solids : 80.1 Date Received : 11/30/2018

GC Column : ZB-GR ID : 0.25 (mm) Date Extracted : 12/03/2018

GC Column : ID : (mm) Date Analyzed : 12/11/2018

Extract Concentrated :(Y / N) Y Extract Volume : 500 (µL)

Soil Aliquot (VOA) : (µL) Extraction Type : SOXH

Heated Purge : (Y / N) Injection Volume : 1.0 (µL)

Purge Volume : (mL) pH : Dilution Factor : 1.0

Cleanup Types : GPC Cleanup Factor : 2.0

Concentration Units (µg/L,mg/L,µg/kg): µg/kg

CAS NO.	ANALYTE	CONCENTRATION	Q
120-12-7	Anthracene	210	U
86-74-8	Carbazole	410	U
84-74-2	Di-n-butylphthalate	210	U
206-44-0	Fluoranthene	69	J
129-00-0	Pyrene	320	
85-68-7	Butylbenzylphthalate	210	U
91-94-1	3,3-Dichlorobenzidine	410	U
56-55-3	Benzo(a)anthracene	70	J
218-01-9	Chrysene	130	J
117-81-7	Bis(2-ethylhexyl)phthalate	210	U
117-84-0	Di-n-octyl phthalate	410	U
205-99-2	Benzo(b)fluoranthene	210	U
207-08-9	Benzo(k)fluoranthene	210	U
50-32-8	Benzo(a)pyrene	210	U
193-39-5	Indeno(1,2,3-cd)pyrene	210	U
53-70-3	Dibenzo(a,h)anthracene	210	U
191-24-2	Benzo(g,h,i)perylene	59	J
58-90-2	2,3,4,6-Tetrachlorophenol	210	U

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

EPA SAMPLE NO.: C5AA1

Lab Name : Chemtech Consulting Group
Contract : EPW14030
Lab Code: CHM
Case No.: R35483
MA No. :
SDG No.: C5AA0
Analytical Method : SVOA
Level : LOW
Matrix : Soil
Lab Sample ID : J6161-02
Sample wt/vol : 30.1 (g/mL): g
Lab File ID : BM018044.D
% Solids : 84.8
Date Received : 11/30/2018
GC Column : ZB-GR ID : 0.25 (mm)
Date Extracted : 12/03/2018
GC Column : ID : (mm)
Date Analyzed : 12/11/2018
Extract Concentrated : (Y / N) Y
Extract Volume : 500 (µL)
Soil Aliquot (VOA) : (µL)
Extraction Type : SOXH
Heated Purge : (Y / N)
Injection Volume : 1.0 (µL)
Purge Volume : (mL)
pH :
Dilution Factor : 1.0
Cleanup Types : GPC
Cleanup Factor : 2.0
Concentration Units (µg/L,mg/L,µg/kg): µg/kg

CAS NO.	ANALYTE	CONCENTRATION	Q
123-91-1	1,4-Dioxane	79	U
100-52-7	Benzaldehyde	390	U
108-95-2	Phenol	150	J
111-44-4	Bis(2-Chloroethyl)ether	390	U
95-57-8	2-Chlorophenol	200	U
95-48-7	2-Methylphenol	390	U
108-60-1	2,2-oxybis(1-Chloropropane)	390	U
98-86-2	Acetophenone	390	U
106-44-5	4-Methylphenol	390	U
621-64-7	N-Nitroso-di-n-propylamine	200	U
67-72-1	Hexachloroethane	200	U
98-95-3	Nitrobenzene	200	U
78-59-1	Isophorone	200	U
88-75-5	2-Nitrophenol	200	U
105-67-9	2,4-Dimethylphenol	200	U
111-91-1	Bis(2-Chloroethoxy)methane	200	U
120-83-2	2,4-Dichlorophenol	200	U
91-20-3	Naphthalene	86	J
106-47-8	4-Chloroaniline	390	U
87-68-3	Hexachlorobutadiene	200	U
105-60-2	Caprolactam	390	U
59-50-7	4-Chloro-3-methylphenol	200	U
91-57-6	2-Methylnaphthalene	62	J
77-47-4	Hexachlorocyclopentadiene	390	U
88-06-2	2,4,6-Trichlorophenol	200	U

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

EPA SAMPLE NO.: C5AA1

Lab Name : Chemtech Consulting Group
Contract : EPW14030
Lab Code: CHM Case No.: R35483
MA No. : SDG No.: C5AA0
Analytical Method : SVOA
Level : LOW
Matrix : Soil
Lab Sample ID : J6161-02
Sample wt/vol : 30.1 (g/mL): g
Lab File ID : BM018044.D
% Solids : 84.8
Date Received : 11/30/2018
GC Column : ZB-GR ID : 0.25 (mm)
Date Extracted : 12/03/2018
GC Column : ID : (mm)
Date Analyzed : 12/11/2018
Extract Concentrated :(Y / N) Y
Extract Volume : 500 (µL)
Soil Aliquot (VOA) : (µL)
Extraction Type : SOXH
Heated Purge : (Y / N)
Injection Volume : 1.0 (µL)
Purge Volume : (mL)
pH : Dilution Factor : 1.0
Cleanup Types : GPC
Cleanup Factor : 2.0
Concentration Units (µg/L,mg/L,µg/kg): µg/kg

CAS NO.	ANALYTE	CONCENTRATION	Q
95-95-4	2,4,5-Trichlorophenol	200	U
92-52-4	1,1-Biphenyl	200	U
91-58-7	2-Chloronaphthalene	200	U
88-74-4	2-Nitroaniline	200	~~U~~ R
131-11-3	Dimethylphthalate	110	J
606-20-2	2,6-Dinitrotoluene	200	U
208-96-8	Acenaphthylene	77	J
99-09-2	3-Nitroaniline	390	~~U~~ R
83-32-9	Acenaphthene	200	U
51-28-5	2,4-Dinitrophenol	390	~~U~~ R
100-02-7	4-Nitrophenol	390	~~U~~ R
132-64-9	Dibenzofuran	200	U
121-14-2	2,4-Dinitrotoluene	200	U
84-66-2	Diethylphthalate	200	U
86-73-7	Fluorene	53	J
7005-72-3	4-Chlorophenyl-phenylether	200	U
100-01-6	4-Nitroaniline	390	~~U~~ R
534-52-1	4,6-Dinitro-2-methylphenol	390	U R
86-30-6	N-Nitrosodiphenylamine	200	U
95-94-3	1,2,4,5-Tetrachlorobenzene	200	U
101-55-3	4-Bromophenyl-phenylether	200	U
118-74-1	Hexachlorobenzene	200	U
1912-24-9	Atrazine	390	U
87-86-5	Pentachlorophenol	390	U
85-01-8	Phenanthrene	520	

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

EPA SAMPLE NO.: C5AA1

Lab Name : Chemtech Consulting Group
Contract : EPW14030
Lab Code: CHM
Case No.: R35483
MA No. :
SDG No.: C5AA0
Analytical Method : SVOA
Level : LOW
Matrix : Soil
Lab Sample ID : J6161-02
Sample wt/vol : 30.1 (g/mL): g
Lab File ID : BM018044.D
% Solids : 84.8
Date Received : 11/30/2018
GC Column : ZB-GR ID : 0.25 (mm)
Date Extracted : 12/03/2018
GC Column : ID : (mm)
Date Analyzed : 12/11/2018
Extract Concentrated :(Y / N) Y
Extract Volume : 500 (µL)
Soil Aliquot (VOA) : (µL)
Extraction Type : SOXH
Heated Purge : (Y / N)
Injection Volume : 1.0 (µL)
Purge Volume : (mL)
pH :
Dilution Factor : 1.0
Cleanup Types : GPC
Cleanup Factor : 2.0
Concentration Units (µg/L,mg/L,µg/kg): µg/kg

CAS NO.	ANALYTE	CONCENTRATION	Q
120-12-7	Anthracene	110	J
86-74-8	Carbazole	390	U
84-74-2	Di-n-butylphthalate	200	U
206-44-0	Fluoranthene	520	
129-00-0	Pyrene	1100	
85-68-7	Butylbenzylphthalate	200	U
91-94-1	3,3-Dichlorobenzidine	390	U
56-55-3	Benzo(a)anthracene	340	
218-01-9	Chrysene	510	
117-81-7	Bis(2-ethylhexyl)phthalate	200	U
117-84-0	Di-n-octyl phthalate	390	U
205-99-2	Benzo(b)fluoranthene	200	U
207-08-9	Benzo(k)fluoranthene	200	U
50-32-8	Benzo(a)pyrene	290	
193-39-5	Indeno(1,2,3-cd)pyrene	140	J
53-70-3	Dibenzo(a,h)anthracene	200	U
191-24-2	Benzo(g,h,i)perylene	210	
58-90-2	2,3,4,6-Tetrachlorophenol	200	U

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

EPA SAMPLE NO.: SBLK65

Lab Name : Chemtech Consulting Group
Contract : EPW14030
Lab Code: CHM
Case No.: R35483
MA No. :
SDG No.: C5AA0
Analytical Method : SVOA
Level : LOW
Matrix : Soil
Lab Sample ID : PB115265BL
Sample wt/vol : 30.0 (g/mL): g
Lab File ID : BM018021.D
% Solids : 100
Date Received :
GC Column : ZB-GR ID : 0.25 (mm)
Date Extracted : 12/03/2018
GC Column : ID : (mm)
Date Analyzed : 12/08/2018
Extract Concentrated : (Y / N) Y
Extract Volume : 500 (µL)
Soil Aliquot (VOA) : (µL)
Extraction Type : SOXH
Heated Purge : (Y / N)
Injection Volume : 1.0 (µL)
Purge Volume : (mL)
pH :
Dilution Factor : 1.0
Cleanup Types : GPC
Cleanup Factor : 2.0
Concentration Units (µg/L,mg/L,µg/kg): µg/kg

CAS NO.	ANALYTE	CONCENTRATION	Q
123-91-1	1,4-Dioxane	67	U
100-52-7	Benzaldehyde	330	U
108-95-2	Phenol	330	U
111-44-4	Bis(2-Chloroethyl)ether	330	U
95-57-8	2-Chlorophenol	170	U
95-48-7	2-Methylphenol	330	U
108-60-1	2,2-oxybis(1-Chloropropane)	330	U
98-86-2	Acetophenone	330	U J
106-44-5	4-Methylphenol	330	U
621-64-7	N-Nitroso-di-n-propylamine	170	U J
67-72-1	Hexachloroethane	170	U
98-95-3	Nitrobenzene	170	U
78-59-1	Isophorone	170	U
88-75-5	2-Nitrophenol	170	U
105-67-9	2,4-Dimethylphenol	170	U
111-91-1	Bis(2-Chloroethoxy)methane	170	U
120-83-2	2,4-Dichlorophenol	170	U
91-20-3	Naphthalene	170	U
106-47-8	4-Chloroaniline	330	U
87-68-3	Hexachlorobutadiene	170	U
105-60-2	Caprolactam	330	U
59-50-7	4-Chloro-3-methylphenol	170	U
91-57-6	2-Methylnaphthalene	170	U
77-47-4	Hexachlorocyclopentadiene	330	U
88-06-2	2,4,6-Trichlorophenol	170	U

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

EPA SAMPLE NO.

SBLK65

Lab Name : Chemtech Consulting Group

Contract : EPW14030

Lab Code: CHM Case No.: R35483

MA No. : SDG No.: C5AA0

Analytical Method : SVOA

Level : LOW

Matrix : Soil

Lab Sample ID : PB115265BL

Sample wt/vol : 30.0 (g/mL): g

Lab File ID : BM018021.D

% Solids : 100

Date Received :

GC Column : ZB-GR ID : 0.25 (mm)

Date Extracted : 12/03/2018

GC Column : ID : (mm)

Date Analyzed : 12/08/2018

Extract Concentrated : (Y / N) Y

Extract Volume : 500 (µL)

Soil Aliquot (VOA) : (µL)

Extraction Type : SOXH

Heated Purge : (Y / N)

Injection Volume : 1.0 (µL)

Purge Volume : (mL)

pH : Dilution Factor : 1.0

Cleanup Types : GPC

Cleanup Factor : 2.0

Concentration Units (µg/L,mg/L,µg/kg): µg/kg

CAS NO.	ANALYTE	CONCENTRATION	Q
95-95-4	2,4,5-Trichlorophenol	170	U
92-52-4	1,1-Biphenyl	170	U
91-58-7	2-Chloronaphthalene	170	U
88-74-4	2-Nitroaniline	170	U
131-11-3	Dimethylphthalate	170	U
606-20-2	2,6-Dinitrotoluene	170	U
208-96-8	Acenaphthylene	170	U
99-09-2	3-Nitroaniline	330	U
83-32-9	Acenaphthene	170	U
51-28-5	2,4-Dinitrophenol	330	U
100-02-7	4-Nitrophenol	330	U
132-64-9	Dibenzofuran	170	U
121-14-2	2,4-Dinitrotoluene	170	U
84-66-2	Diethylphthalate	170	U
86-73-7	Fluorene	170	U
7005-72-3	4-Chlorophenyl-phenylether	170	U
100-01-6	4-Nitroaniline	330	U
534-52-1	4,6-Dinitro-2-methylphenol	330	U
86-30-6	N-Nitrosodiphenylamine	170	U
95-94-3	1,2,4,5-Tetrachlorobenzene	170	U
101-55-3	4-Bromophenyl-phenylether	170	U
118-74-1	Hexachlorobenzene	170	U
1912-24-9	Atrazine	330	U
87-86-5	Pentachlorophenol	330	U
85-01-8	Phenanthrene	170	U

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

EPA SAMPLE NO.

SBLK65

Lab Name : Chemtech Consulting Group

Contract : EPW14030

Lab Code: CHM Case No.: R35483

MA No. : SDG No.: C5AA0

Analytical Method : SVOA

Level : LOW

Matrix : Soil

Lab Sample ID : PB115265BL

Sample wt/vol : 30.0 (g/mL): g

Lab File ID : BM018021.D

% Solids : 100

Date Received :

GC Column : ZB-GR ID : 0.25 (mm)

Date Extracted : 12/03/2018

GC Column : ID : (mm)

Date Analyzed : 12/08/2018

Extract Concentrated :(Y / N) Y

Extract Volume : 500 (µL)

Soil Aliquot (VOA) : (µL)

Extraction Type : SOXH

Heated Purge : (Y / N)

Injection Volume : 1.0 (µL)

Purge Volume : (mL)

pH : Dilution Factor : 1.0

Cleanup Types : GPC

Cleanup Factor : 2.0

Concentration Units (µg/L,mg/L,µg/kg): µg/kg

CAS NO.	ANALYTE	CONCENTRATION	Q
120-12-7	Anthracene	170	U
86-74-8	Carbazole	330	U
84-74-2	Di-n-butylphthalate	170	U
206-44-0	Fluoranthene	330	U
129-00-0	Pyrene	170	U
85-68-7	Butylbenzylphthalate	170	U
91-94-1	3,3-Dichlorobenzidine	330	U
56-55-3	Benzo(a)anthracene	170	U
218-01-9	Chrysene	170	U
117-81-7	Bis(2-ethylhexyl)phthalate	170	U
117-84-0	Di-n-octyl phthalate	330	U
205-99-2	Benzo(b)fluoranthene	170	U
207-08-9	Benzo(k)fluoranthene	170	U
50-32-8	Benzo(a)pyrene	170	U
193-39-5	Indeno(1,2,3-cd)pyrene	170	U
53-70-3	Dibenzo(a,h)anthracene	170	U
191-24-2	Benzo(g,h,i)perylene	170	U
58-90-2	2,3,4,6-Tetrachlorophenol	170	U

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
Environmental Sciences Center
701 Mapes Road
Fort Meade, Maryland 20755-5350

DATE: 3/27/2019

SUBJECT: Region III Data QA Review

FROM: Brandon McDonald
Region III ESAT RPO (3EA22)

TO: DEBORAH LINDSEY
Hazardous Site Cleanup Division (HSCD)

Attached is the data validation report for the ALIQUIPPA TIN MILL SITE site for DAS# R35483; SDG# C5AA2 completed by the Region III Environmental Services Assistance Team (ESAT) contractor, ICF International, under the direction of Region III EAID.

If you have any questions regarding this review, please call Brandon McDonald at (410) 305-2607 or you can call Eric Graybill at (410)-305-2665.

Attachment

cc: [redacted] WESTON SOLUTIONS)
[redacted] (WESTON SOLUTIONS)

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ICF
ESAT Region 3
US Environmental Protection Agency Environmental Science Center
701 Mapes Road   Ft. Meade, MD 20755-5350
Phone 410-305-3012

Date: March 18, 2019

To: Brandon McDonald
ESAT Region 3 Project Officer

From: [redacted]
Validator

[redacted]
Reviewer

Subject: Organic Data Validation (S4VM)
Aliquippa Tin Mill
R35483 C5AA2

Overview

This data package consisted of four (4) soil samples analyzed for semivolatile target analytes, including one (1) field duplicate pair.

Analyses were performed by Chemtech Consulting Group. The samples were submitted to the laboratory directly by the sampling contractor. The laboratory indicated analyses were performed according to the Contract Laboratory Program (CLP) Statement of Work (SOW) SOM02.4.

Data were validated according to the National Functional Guidelines for Organic Superfund Methods Data Review and applicable USEPA Region 3 modifications. The validation report has been assigned the Superfund Data Validation Label S4VM (Stage_4 _Validation_Manual).

The following validation narrative is an evaluation of laboratory reported data based on the electronic data package received by Region 3 on February 06, 2019.

Summary

Significant data quality outliers regarding Deuterated Monitoring Compound (DMC) recoveries were identified that resulted in rejection of sample results. Less significant data quality outliers were identified resulting in estimation of sample results including, but not limited to, calibration precision as detailed below.

Major Problems

Percent recoveries for the following DMCs were < 10% for the samples listed below. Affected analytes were non-detect in the associated samples. Quantitation limits have been rejected and qualified “R”.

DMC	Affected Samples
4-Nitrophenol-d4	C5AA3, C5AA4, C5AA5
4,6-Dinitro-2-methylphenol-d2	C5AA2, C5AA3, C5AA4, C5AA5

Minor Problems

Target analytes hexachlorocyclopentadiene and 2,4-dinitrophenol exceeded the %D criteria in closing CCV standard SSTD02037. The associated samples and method blank were non-detect for these analytes. Non-detects are estimated and have been qualified "UJ" unless superseded by "R".

Notes

Target analytes detected at concentrations below Contract Required Quantitation Limits (CRQLs) are estimated and have been qualified "J".

The method blank was free from contamination.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) were not analyzed.

Results reported for field duplicate pair C5AA2/C5AA3 were comparable.

Manual integrations were performed and identified by the laboratory. A subset of these was evaluated by the reviewer and found to be accurate and consistent. No action was taken by the reviewer based on manual integrations.

Tentatively Identified Compounds (TICs) are not reviewed by data validators. The validation qualifiers are applied by EXES electronic validation based on laboratory qualifiers. By definition, all compounds identified as TICs should be treated as tentative identifications and all reported results should be considered estimated.

Glossary of Organic Data Qualifier Codes

Validation Qualifiers	In order of descending precedence. Only one of these qualifiers may apply to any result.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
U	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.

Additional Qualifiers	Additional qualifiers may be combined with other qualifiers.
N	The analyte has been “tentatively identified” or “presumptively” as present.
B	The result is presumed a blank contaminant. This qualifier is used for drinking water samples only.
C	The target Pesticide or Aroclor analyte identification has been confirmed by Gas Chromatography/Mass Spectrometry (GC/MS). This qualifier may be added to other qualifiers.
X	The target Pesticide or Aroclor analyte identification was not confirmed when GC/MS analysis was performed. This qualifier may be added to other qualifiers.

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

EPA SAMPLE NO.

C5AA2

Lab Name : Chemtech Consulting Group

Contract : EPW14030

Lab Code: CHM Case No.: R35483

MA No. : SDG No.: C5AA2

Analytical Method : SVOA

Level : LOW

Matrix : Soil

Lab Sample ID : J6476-01

Sample wt/vol : 30.1 (g/mL): g

Lab File ID : BN004177.D

% Solids : 89.6

Date Received : 12/18/2018

GC Column : ZB-GR ID : 0.25 (mm)

Date Extracted : 12/18/2018

GC Column : ID : (mm)

Date Analyzed : 12/22/2018

Extract Concentrated :(Y / N) Y

Extract Volume : 500 (µL)

Soil Aliquot (VOA) : (µL)

Extraction Type : SOXH

Heated Purge : (Y / N)

Injection Volume : 1.0 (µL)

Purge Volume : (mL)

pH : Dilution Factor : 1.0

Cleanup Types : GPC

Cleanup Factor : 2.0

Concentration Units (µg/L,mg/L,µg/kg): µg/kg

CAS NO.	ANALYTE	CONCENTRATION	Q
123-91-1	1,4-Dioxane	75	U
100-52-7	Benzaldehyde	370	U
108-95-2	Phenol	76	J
111-44-4	Bis(2-Chloroethyl)ether	370	U
95-57-8	2-Chlorophenol	190	U
95-48-7	2-Methylphenol	370	U
108-60-1	2,2-oxybis(1-Chloropropane)	370	U
98-86-2	Acetophenone	370	U
106-44-5	4-Methylphenol	370	U
621-64-7	N-Nitroso-di-n-propylamine	190	U
67-72-1	Hexachloroethane	190	U
98-95-3	Nitrobenzene	190	U
78-59-1	Isophorone	190	U
88-75-5	2-Nitrophenol	190	U
105-67-9	2,4-Dimethylphenol	190	U
111-91-1	Bis(2-Chloroethoxy)methane	190	U
120-83-2	2,4-Dichlorophenol	190	U
91-20-3	Naphthalene	190	U
106-47-8	4-Chloroaniline	370	U
87-68-3	Hexachlorobutadiene	190	U
105-60-2	Caprolactam	370	U
59-50-7	4-Chloro-3-methylphenol	190	U
91-57-6	2-Methylnaphthalene	190	U
77-47-4	Hexachlorocyclopentadiene	370	UJ
88-06-2	2,4,6-Trichlorophenol	190	U

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

EPA SAMPLE NO.

C5AA2

Lab Name : Chemtech Consulting Group
Contract : EPW14030
Lab Code: CHM Case No.: R35483
MA No. : SDG No.: C5AA2
Analytical Method : SVOA
Level : LOW
Matrix : Soil
Lab Sample ID : J6476-01
Sample wt/vol : 30.1 (g/mL): g
Lab File ID : BN004177.D
% Solids : 89.6
Date Received : 12/18/2018
GC Column : ZB-GR ID : 0.25 (mm)
Date Extracted : 12/18/2018
GC Column : ID : (mm)
Date Analyzed : 12/22/2018
Extract Concentrated :(Y / N) Y
Extract Volume : 500 (µL)
Soil Aliquot (VOA) : (µL)
Extraction Type : SOXH
Heated Purge : (Y / N)
Injection Volume : 1.0 (µL)
Purge Volume : (mL)
pH : Dilution Factor : 1.0
Cleanup Types : GPC
Cleanup Factor : 2.0
Concentration Units (µg/L,mg/L,µg/kg): µg/kg

CAS NO.	ANALYTE	CONCENTRATION	Q
95-95-4	2,4,5-Trichlorophenol	190	U
92-52-4	1,1-Biphenyl	190	U
91-58-7	2-Chloronaphthalene	190	U
88-74-4	2-Nitroaniline	190	U
131-11-3	Dimethylphthalate	240	
606-20-2	2,6-Dinitrotoluene	190	U
208-96-8	Acenaphthylene	190	U
99-09-2	3-Nitroaniline	370	U
83-32-9	Acenaphthene	190	U
51-28-5	2,4-Dinitrophenol	370	UJ
100-02-7	4-Nitrophenol	370	U
132-64-9	Dibenzofuran	190	U
121-14-2	2,4-Dinitrotoluene	190	U
84-66-2	Diethylphthalate	190	U
86-73-7	Fluorene	190	U
7005-72-3	4-Chlorophenyl-phenylether	190	U
100-01-6	4-Nitroaniline	370	U
534-52-1	4,6-Dinitro-2-methylphenol	370	~~U~~ R
86-30-6	N-Nitrosodiphenylamine	190	U
95-94-3	1,2,4,5-Tetrachlorobenzene	190	U
101-55-3	4-Bromophenyl-phenylether	190	U
118-74-1	Hexachlorobenzene	190	U
1912-24-9	Atrazine	370	U
87-86-5	Pentachlorophenol	370	U
85-01-8	Phenanthrene	190	U

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

EPA SAMPLE NO.: C5AA2

Lab Name : Chemtech Consulting Group
Contract : EPW14030
Lab Code: CHM Case No.: R35483
MA No. : SDG No.: C5AA2
Analytical Method : SVOA
Level : LOW
Matrix : Soil
Lab Sample ID : J6476-01
Sample wt/vol : 30.1 (g/mL): g
Lab File ID : BN004177.D
% Solids : 89.6
Date Received : 12/18/2018
GC Column : ZB-GR ID : 0.25 (mm)
Date Extracted : 12/18/2018
GC Column : ID : (mm)
Date Analyzed : 12/22/2018
Extract Concentrated : (Y / N) Y
Extract Volume : 500 (µL)
Soil Aliquot (VOA) : (µL)
Extraction Type : SOXH
Heated Purge : (Y / N)
Injection Volume : 1.0 (µL)
Purge Volume : (mL)
pH : Dilution Factor : 1.0
Cleanup Types : GPC
Cleanup Factor : 2.0
Concentration Units (µg/L,mg/L,µg/kg): µg/kg

CAS NO.	ANALYTE	CONCENTRATION	Q
120-12-7	Anthracene	190	U
86-74-8	Carbazole	370	U
84-74-2	Di-n-butylphthalate	190	U
206-44-0	Fluoranthene	39	J
129-00-0	Pyrene	84	J
85-68-7	Butylbenzylphthalate	190	U
91-94-1	3,3-Dichlorobenzidine	370	U
56-55-3	Benzo(a)anthracene	190	U
218-01-9	Chrysene	43	J
117-81-7	Bis(2-ethylhexyl)phthalate	190	U
117-84-0	Di-n-octyl phthalate	370	U
205-99-2	Benzo(b)fluoranthene	48	J
207-08-9	Benzo(k)fluoranthene	190	U
50-32-8	Benzo(a)pyrene	190	U
193-39-5	Indeno(1,2,3-cd)pyrene	190	U
53-70-3	Dibenzo(a,h)anthracene	190	U
191-24-2	Benzo(g,h,i)perylene	190	U
58-90-2	2,3,4,6-Tetrachlorophenol	190	U

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

EPA SAMPLE NO.: C5AA3

Lab Name : Chemtech Consulting Group   Contract : EPW14030

Lab Code: CHM   Case No.: R35483   MA No. :   SDG No.: C5AA2

Analytical Method : SVOA   Level : LOW

Matrix : Soil   Lab Sample ID : J6476-02

Sample wt/vol : 30.1 (g/mL): g   Lab File ID : BN004178.D

% Solids : 88.9   Date Received : 12/18/2018

GC Column : ZB-GR ID : 0.25 (mm)   Date Extracted : 12/18/2018

GC Column : ID : (mm)   Date Analyzed : 12/22/2018

Extract Concentrated : (Y / N) Y   Extract Volume : 500 (µL)

Soil Aliquot (VOA) : (µL)   Extraction Type : SOXH

Heated Purge : (Y / N)   Injection Volume : 1.0 (µL)

Purge Volume : (mL)   pH :   Dilution Factor : 1.0

Cleanup Types : GPC   Cleanup Factor : 2.0

Concentration Units (µg/L,mg/L,µg/kg): µg/kg

CAS NO.	ANALYTE	CONCENTRATION	Q
123-91-1	1,4-Dioxane	75	U
100-52-7	Benzaldehyde	370	U
108-95-2	Phenol	74	J
111-44-4	Bis(2-Chloroethyl)ether	370	U
95-57-8	2-Chlorophenol	190	U
95-48-7	2-Methylphenol	370	U
108-60-1	2,2-oxybis(1-Chloropropane)	370	U
98-86-2	Acetophenone	370	U
106-44-5	4-Methylphenol	370	U
621-64-7	N-Nitroso-di-n-propylamine	190	U
67-72-1	Hexachloroethane	190	U
98-95-3	Nitrobenzene	190	U
78-59-1	Isophorone	190	U
88-75-5	2-Nitrophenol	190	U
105-67-9	2,4-Dimethylphenol	190	U
111-91-1	Bis(2-Chloroethoxy)methane	190	U
120-83-2	2,4-Dichlorophenol	190	U
91-20-3	Naphthalene	190	U
106-47-8	4-Chloroaniline	370	U
87-68-3	Hexachlorobutadiene	190	U
105-60-2	Caprolactam	370	U
59-50-7	4-Chloro-3-methylphenol	190	U
91-57-6	2-Methylnaphthalene	190	U
77-47-4	Hexachlorocyclopentadiene	370	U J
88-06-2	2,4,6-Trichlorophenol	190	U

EPA SAMPLE NO.

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

C5AA3

Lab Name : Chemtech Consulting Group

Contract : EPW14030

Lab Code: CHM Case No.: R35483

MA No. : SDG No.: C5AA2

Analytical Method : SVOA

Level : LOW

Matrix : Soil

Lab Sample ID : J6476-02

Sample wt/vol : 30.1 (g/mL): g

Lab File ID : BN004178.D

% Solids : 88.9

Date Received : 12/18/2018

GC Column : ZB-GR ID : 0.25 (mm)

Date Extracted : 12/18/2018

GC Column : ID : (mm)

Date Analyzed : 12/22/2018

Extract Concentrated : (Y / N) Y

Extract Volume : 500 (µL)

Soil Aliquot (VOA) : (µL)

Extraction Type : SOXH

Heated Purge : (Y / N)

Injection Volume : 1.0 (µL)

Purge Volume : (mL)

pH : Dilution Factor : 1.0

Cleanup Types : GPC

Cleanup Factor : 2.0

Concentration Units (µg/L,mg/L,µg/kg): µg/kg

CAS NO.	ANALYTE	CONCENTRATION	Q
95-95-4	2,4,5-Trichlorophenol	190	U
92-52-4	1,1-Biphenyl	190	U
91-58-7	2-Chloronaphthalene	190	U
88-74-4	2-Nitroaniline	190	~~U~~ R
131-11-3	Dimethylphthalate	150	J
606-20-2	2,6-Dinitrotoluene	190	U
208-96-8	Acenaphthylene	190	U
99-09-2	3-Nitroaniline	370	~~U~~ R
83-32-9	Acenaphthene	190	U
51-28-5	2,4-Dinitrophenol	370	~~U~~ R
100-02-7	4-Nitrophenol	370	~~U~~ R
132-64-9	Dibenzofuran	190	U
121-14-2	2,4-Dinitrotoluene	190	U
84-66-2	Diethylphthalate	190	U
86-73-7	Fluorene	190	U
7005-72-3	4-Chlorophenyl-phenylether	190	U
100-01-6	4-Nitroaniline	370	~~U~~ R
534-52-1	4,6-Dinitro-2-methylphenol	370	~~U~~ R
86-30-6	N-Nitrosodiphenylamine	190	U
95-94-3	1,2,4,5-Tetrachlorobenzene	190	U
101-55-3	4-Bromophenyl-phenylether	190	U
118-74-1	Hexachlorobenzene	190	U
1912-24-9	Atrazine	370	U
87-86-5	Pentachlorophenol	370	U
85-01-8	Phenanthrene	190	U

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

EPA SAMPLE NO.: C5AA3

Lab Name : Chemtech Consulting Group
Contract : EPW14030
Lab Code: CHM Case No.: R35483
MA No. :   SDG No.: C5AA2
Analytical Method : SVOA
Level : LOW
Matrix : Soil
Lab Sample ID : J6476-02
Sample wt/vol : 30.1 (g/mL): g
Lab File ID : BN004178.D
% Solids : 88.9
Date Received : 12/18/2018
GC Column : ZB-GR ID : 0.25 (mm)
Date Extracted : 12/18/2018
GC Column : ______ ID : ______ (mm)
Date Analyzed : 12/22/2018
Extract Concentrated : (Y / N) Y
Extract Volume : 500 (µL)
Soil Aliquot (VOA) : ______ (µL)
Extraction Type : SOXH
Heated Purge : (Y / N) ______
Injection Volume : 1.0 (µL)
Purge Volume : ______ (mL)
pH : ______ Dilution Factor : 1.0
Cleanup Types : GPC
Cleanup Factor : 2.0
Concentration Units (µg/L,mg/L,µg/kg): µg/kg

CAS NO.	ANALYTE	CONCENTRATION	Q
120-12-7	Anthracene	190	U
86-74-8	Carbazole	370	U
84-74-2	Di-n-butylphthalate	190	U
206-44-0	Fluoranthene	370	U
129-00-0	Pyrene	88	J
85-68-7	Butylbenzylphthalate	190	U
91-94-1	3,3-Dichlorobenzidine	370	U
56-55-3	Benzo(a)anthracene	190	U
218-01-9	Chrysene	190	U
117-81-7	Bis(2-ethylhexyl)phthalate	190	U
117-84-0	Di-n-octyl phthalate	370	U
205-99-2	Benzo(b)fluoranthene	47	J
207-08-9	Benzo(k)fluoranthene	190	U
50-32-8	Benzo(a)pyrene	190	U
193-39-5	Indeno(1,2,3-cd)pyrene	190	U
53-70-3	Dibenzo(a,h)anthracene	190	U
191-24-2	Benzo(g,h,i)perylene	190	U
58-90-2	2,3,4,6-Tetrachlorophenol	190	U

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

EPA SAMPLE NO.

C5AA4

Lab Name : Chemtech Consulting Group
Contract : EPW14030
Lab Code: CHM Case No.: R35483
MA No. : SDG No.: C5AA2
Analytical Method : SVOA
Level : LOW
Matrix : Soil
Lab Sample ID : J6476-03
Sample wt/vol : 30.1 (g/mL): g
Lab File ID : BN004176.D
% Solids : 85.5
Date Received : 12/18/2018
GC Column : ZB-GR ID : 0.25 (mm)
Date Extracted : 12/18/2018
GC Column : ID : (mm)
Date Analyzed : 12/22/2018
Extract Concentrated :(Y / N) Y
Extract Volume : 500 (µL)
Soil Aliquot (VOA) : (µL)
Extraction Type : SOXH
Heated Purge : (Y / N)
Injection Volume : 1.0 (µL)
Purge Volume : (mL)
pH : Dilution Factor : 1.0
Cleanup Types : GPC
Cleanup Factor : 2.0
Concentration Units (µg/L,mg/L,µg/kg): µg/kg

CAS NO.	ANALYTE	CONCENTRATION	Q
123-91-1	1,4-Dioxane	78	U
100-52-7	Benzaldehyde	380	U
108-95-2	Phenol	80	J
111-44-4	Bis(2-Chloroethyl)ether	380	U
95-57-8	2-Chlorophenol	200	U
95-48-7	2-Methylphenol	380	U
108-60-1	2,2-oxybis(1-Chloropropane)	380	U
98-86-2	Acetophenone	380	U
106-44-5	4-Methylphenol	380	U
621-64-7	N-Nitroso-di-n-propylamine	200	U
67-72-1	Hexachloroethane	200	U
98-95-3	Nitrobenzene	200	U
78-59-1	Isophorone	200	U
88-75-5	2-Nitrophenol	200	U
105-67-9	2,4-Dimethylphenol	200	U
111-91-1	Bis(2-Chloroethoxy)methane	200	U
120-83-2	2,4-Dichlorophenol	200	U
91-20-3	Naphthalene	40	J
106-47-8	4-Chloroaniline	380	U
87-68-3	Hexachlorobutadiene	200	U
105-60-2	Caprolactam	380	U
59-50-7	4-Chloro-3-methylphenol	200	U
91-57-6	2-Methylnaphthalene	89	J
77-47-4	Hexachlorocyclopentadiene	380	UJ
88-06-2	2,4,6-Trichlorophenol	200	U

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

EPA SAMPLE NO.

C5AA4

Lab Name : Chemtech Consulting Group
Contract : EPW14030

Lab Code: CHM Case No.: R35483
MA No. : SDG No.: C5AA2

Analytical Method : SVOA
Level : LOW

Matrix : Soil
Lab Sample ID : J6476-03

Sample wt/vol : 30.1 (g/mL): g
Lab File ID : BN004176.D

% Solids : 85.5
Date Received : 12/18/2018

GC Column : ZB-GR ID : 0.25 (mm)
Date Extracted : 12/18/2018

GC Column : ID : (mm)
Date Analyzed : 12/22/2018

Extract Concentrated : (Y / N) Y
Extract Volume : 500 (µL)

Soil Aliquot (VOA) : (µL)
Extraction Type : SOXH

Heated Purge : (Y / N)
Injection Volume : 1.0 (µL)

Purge Volume : (mL)
pH : Dilution Factor : 1.0

Cleanup Types : GPC
Cleanup Factor : 2.0

Concentration Units (µg/L,mg/L,µg/kg): µg/kg

CAS NO.	ANALYTE	CONCENTRATION	Q
95-95-4	2,4,5-Trichlorophenol	200	U
92-52-4	1,1-Biphenyl	200	U
91-58-7	2-Chloronaphthalene	200	U
88-74-4	2-Nitroaniline	200	~~U~~ R
131-11-3	Dimethylphthalate	330	
606-20-2	2,6-Dinitrotoluene	200	U
208-96-8	Acenaphthylene	200	U
99-09-2	3-Nitroaniline	380	~~U~~ R
83-32-9	Acenaphthene	200	U
51-28-5	2,4-Dinitrophenol	380	~~U~~ R
100-02-7	4-Nitrophenol	380	~~U~~ R
132-64-9	Dibenzofuran	200	U
121-14-2	2,4-Dinitrotoluene	200	U
84-66-2	Diethylphthalate	200	U
86-73-7	Fluorene	200	U
7005-72-3	4-Chlorophenyl-phenylether	200	U
100-01-6	4-Nitroaniline	380	~~U~~ R
534-52-1	4,6-Dinitro-2-methylphenol	380	~~U~~ R
86-30-6	N-Nitrosodiphenylamine	200	U
95-94-3	1,2,4,5-Tetrachlorobenzene	200	U
101-55-3	4-Bromophenyl-phenylether	200	U
118-74-1	Hexachlorobenzene	200	U
1912-24-9	Atrazine	380	U
87-86-5	Pentachlorophenol	380	U
85-01-8	Phenanthrene	87	J

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

EPA SAMPLE NO.

C5AA4

Lab Name : Chemtech Consulting Group
Contract : EPW14030
Lab Code: CHM Case No.: R35483
MA No. : SDG No.: C5AA2
Analytical Method : SVOA
Level : LOW
Matrix : Soil
Lab Sample ID : J6476-03
Sample wt/vol : 30.1 (g/mL): g
Lab File ID : BN004176.D
% Solids : 85.5
Date Received : 12/18/2018
GC Column : ZB-GR ID : 0.25 (mm)
Date Extracted : 12/18/2018
GC Column : ID : (mm)
Date Analyzed : 12/22/2018
Extract Concentrated :(Y / N) Y
Extract Volume : 500 (µL)
Soil Aliquot (VOA) : (µL)
Extraction Type : SOXH
Heated Purge : (Y / N)
Injection Volume : 1.0 (µL)
Purge Volume : (mL)
pH : Dilution Factor : 1.0
Cleanup Types : GPC
Cleanup Factor : 2.0
Concentration Units (µg/L,mg/L,µg/kg): µg/kg

CAS NO.	ANALYTE	CONCENTRATION	Q
120-12-7	Anthracene	200	U
86-74-8	Carbazole	380	U
84-74-2	Di-n-butylphthalate	200	U
206-44-0	Fluoranthene	60	J
129-00-0	Pyrene	250	
85-68-7	Butylbenzylphthalate	200	U
91-94-1	3,3-Dichlorobenzidine	380	U
56-55-3	Benzo(a)anthracene	66	J
218-01-9	Chrysene	95	J
117-81-7	Bis(2-ethylhexyl)phthalate	200	U
117-84-0	Di-n-octyl phthalate	380	U
205-99-2	Benzo(b)fluoranthene	200	U
207-08-9	Benzo(k)fluoranthene	200	U
50-32-8	Benzo(a)pyrene	54	J
193-39-5	Indeno(1,2,3-cd)pyrene	200	U
53-70-3	Dibenzo(a,h)anthracene	200	U
191-24-2	Benzo(g,h,i)perylene	200	U
58-90-2	2,3,4,6-Tetrachlorophenol	200	U

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

EPA SAMPLE NO.

C5AA5

Lab Name : Chemtech Consulting Group | Contract : EPW14030

Lab Code: CHM | Case No.: R35483 | MA No. : | SDG No.: C5AA2

Analytical Method : SVOA | Level : LOW

Matrix : Soil | Lab Sample ID : J6476-04

Sample wt/vol : 30.0 (g/mL): g | Lab File ID : BN004175.D

% Solids : 80.3 | Date Received : 12/18/2018

GC Column : ZB-GR ID : 0.25 (mm) | Date Extracted : 12/18/2018

GC Column : ID : (mm) | Date Analyzed : 12/21/2018

Extract Concentrated : (Y / N) Y | Extract Volume : 500 (µL)

Soil Aliquot (VOA) : (µL) | Extraction Type : SOXH

Heated Purge : (Y / N) | Injection Volume : 1.0 (µL)

Purge Volume : (mL) | pH : | Dilution Factor : 1.0

Cleanup Types : GPC | Cleanup Factor : 2.0

Concentration Units (µg/L,mg/L,µg/kg): µg/kg

CAS NO.	ANALYTE	CONCENTRATION	Q
123-91-1	1,4-Dioxane	83	U
100-52-7	Benzaldehyde	410	U
108-95-2	Phenol	91	J
111-44-4	Bis(2-Chloroethyl)ether	410	U
95-57-8	2-Chlorophenol	210	U
95-48-7	2-Methylphenol	410	U
108-60-1	2,2-oxybis(1-Chloropropane)	410	U
98-86-2	Acetophenone	410	U
106-44-5	4-Methylphenol	410	U
621-64-7	N-Nitroso-di-n-propylamine	210	U
67-72-1	Hexachloroethane	210	U
98-95-3	Nitrobenzene	210	U
78-59-1	Isophorone	210	U
88-75-5	2-Nitrophenol	210	U
105-67-9	2,4-Dimethylphenol	210	U
111-91-1	Bis(2-Chloroethoxy)methane	210	U
120-83-2	2,4-Dichlorophenol	210	U
91-20-3	Naphthalene	120	J
106-47-8	4-Chloroaniline	410	U
87-68-3	Hexachlorobutadiene	210	U
105-60-2	Caprolactam	410	U
59-50-7	4-Chloro-3-methylphenol	210	U
91-57-6	2-Methylnaphthalene	71	J
77-47-4	Hexachlorocyclopentadiene	410	U J
88-06-2	2,4,6-Trichlorophenol	210	U

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

EPA SAMPLE NO.: C5AA5

Lab Name : Chemtech Consulting Group   Contract : EPW14030

Lab Code: CHM   Case No.: R35483   MA No. : ____   SDG No.: C5AA2

Analytical Method : SVOA   Level : LOW

Matrix : Soil   Lab Sample ID : J6476-04

Sample wt/vol : 30.0 (g/mL): g   Lab File ID : BN004175.D

% Solids : 80.3   Date Received : 12/18/2018

GC Column : ZB-GR   ID : 0.25 (mm)   Date Extracted : 12/18/2018

GC Column : ____   ID : ____ (mm)   Date Analyzed : 12/21/2018

Extract Concentrated : (Y / N) Y   Extract Volume : 500 (µL)

Soil Aliquot (VOA) : ____ (µL)   Extraction Type : SOXH

Heated Purge : (Y / N) ____   Injection Volume : 1.0 (µL)

Purge Volume : ____ (mL)   pH : ____   Dilution Factor : 1.0

Cleanup Types : GPC   Cleanup Factor : 2.0

Concentration Units (µg/L,mg/L,µg/kg): µg/kg

CAS NO.	ANALYTE	CONCENTRATION	Q
95-95-4	2,4,5-Trichlorophenol	210	U
92-52-4	1,1-Biphenyl	210	U
91-58-7	2-Chloronaphthalene	210	U
88-74-4	2-Nitroaniline	210	~~U~~ R
131-11-3	Dimethylphthalate	220	
606-20-2	2,6-Dinitrotoluene	210	U
208-96-8	Acenaphthylene	55	J
99-09-2	3-Nitroaniline	410	~~U~~ R
83-32-9	Acenaphthene	210	U
51-28-5	2,4-Dinitrophenol	410	~~U~~ R
100-02-7	4-Nitrophenol	410	~~U~~ R
132-64-9	Dibenzofuran	210	U
121-14-2	2,4-Dinitrotoluene	210	U
84-66-2	Diethylphthalate	210	U
86-73-7	Fluorene	210	U
7005-72-3	4-Chlorophenyl-phenylether	210	U
100-01-6	4-Nitroaniline	410	~~U~~ R
534-52-1	4,6-Dinitro-2-methylphenol	410	~~U~~ R
86-30-6	N-Nitrosodiphenylamine	210	U
95-94-3	1,2,4,5-Tetrachlorobenzene	210	U
101-55-3	4-Bromophenyl-phenylether	210	U
118-74-1	Hexachlorobenzene	210	U
1912-24-9	Atrazine	410	U
87-86-5	Pentachlorophenol	410	U
85-01-8	Phenanthrene	300	

FORM 1A-OR
ORGANIC ANALYSIS DATA SHEET
TARGET ANALYTE LIST

EPA SAMPLE NO.: C5AA5

Lab Name : Chemtech Consulting Group　　Contract : EPW14030

Lab Code: CHM　　Case No.: R35483　　MA No. : 　　SDG No.: C5AA2

Analytical Method : SVOA　　Level : LOW

Matrix : Soil　　Lab Sample ID : J6476-04

Sample wt/vol : 30.0 (g/mL): g　　Lab File ID : BN004175.D

% Solids : 80.3　　Date Received : 12/18/2018

GC Column : ZB-GR　ID : 0.25 (mm)　　Date Extracted : 12/18/2018

GC Column : 　ID : 　(mm)　　Date Analyzed : 12/21/2018

Extract Concentrated : (Y / N) Y　　Extract Volume : 500 (µL)

Soil Aliquot (VOA) : 　(µL)　　Extraction Type : SOXH

Heated Purge : (Y / N) 　　Injection Volume : 1.0 (µL)

Purge Volume : 　(mL)　　pH : 　Dilution Factor : 1.0

Cleanup Types : GPC　　Cleanup Factor : 2.0

Concentration Units (µg/L,mg/L,µg/kg): µg/kg

CAS NO.	ANALYTE	CONCENTRATION	Q
120-12-7	Anthracene	84	J
86-74-8	Carbazole	410	U
84-74-2	Di-n-butylphthalate	210	U
206-44-0	Fluoranthene	490	
129-00-0	Pyrene	2300	
85-68-7	Butylbenzylphthalate	210	U
91-94-1	3,3-Dichlorobenzidine	410	U
56-55-3	Benzo(a)anthracene	490	
218-01-9	Chrysene	780	
117-81-7	Bis(2-ethylhexyl)phthalate	210	U
117-84-0	Di-n-octyl phthalate	410	U
205-99-2	Benzo(b)fluoranthene	490	
207-08-9	Benzo(k)fluoranthene	190	J
50-32-8	Benzo(a)pyrene	480	
193-39-5	Indeno(1,2,3-cd)pyrene	200	J
53-70-3	Dibenzo(a,h)anthracene	87	J
191-24-2	Benzo(g,h,i)perylene	380	
58-90-2	2,3,4,6-Tetrachlorophenol	210	U

ATTACHMENT 4

WASTE DISPOSAL MANIFESTS

**Due to the size of the electronic file
the Disposal Manifests are not included in the Final Report**

Available Upon Request

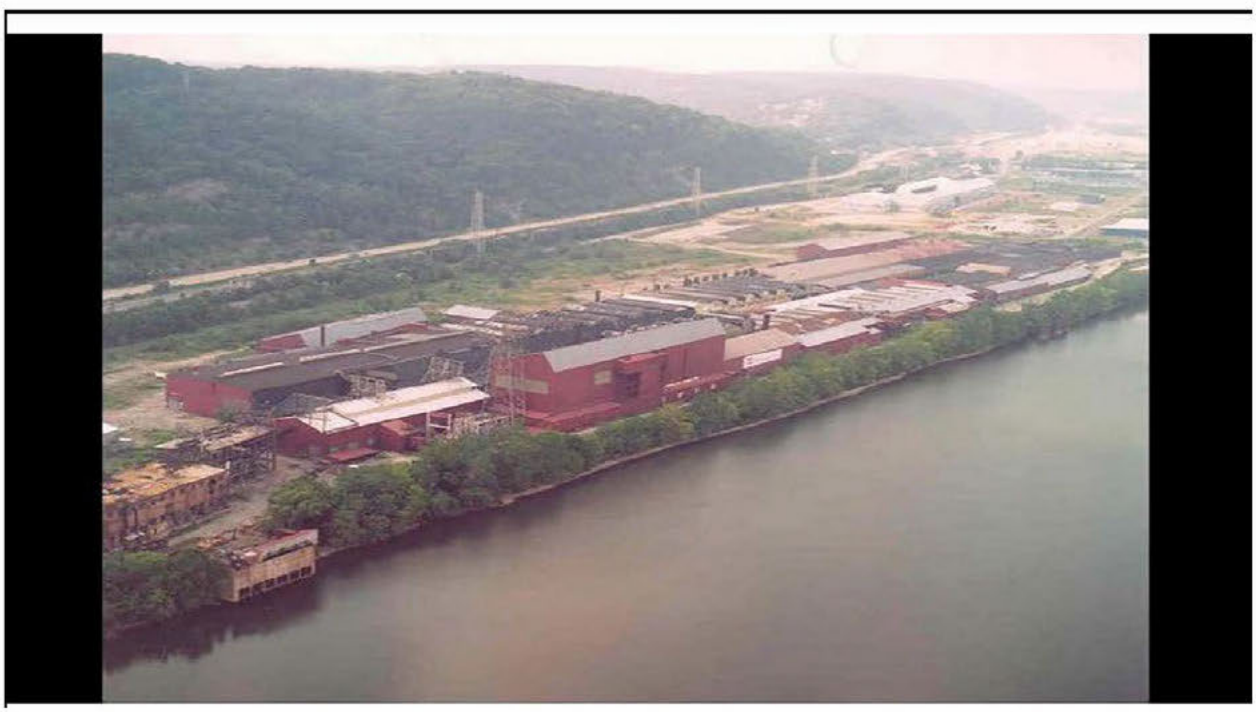
ATTACHMENT 5

PHOTOGRAPHIC DOCUMENTATION

Aliquippa Tin Mill Site
Aliquippa, Beaver County, Pennsylvania
Federal On-Scene Coordinator's Report Photographs

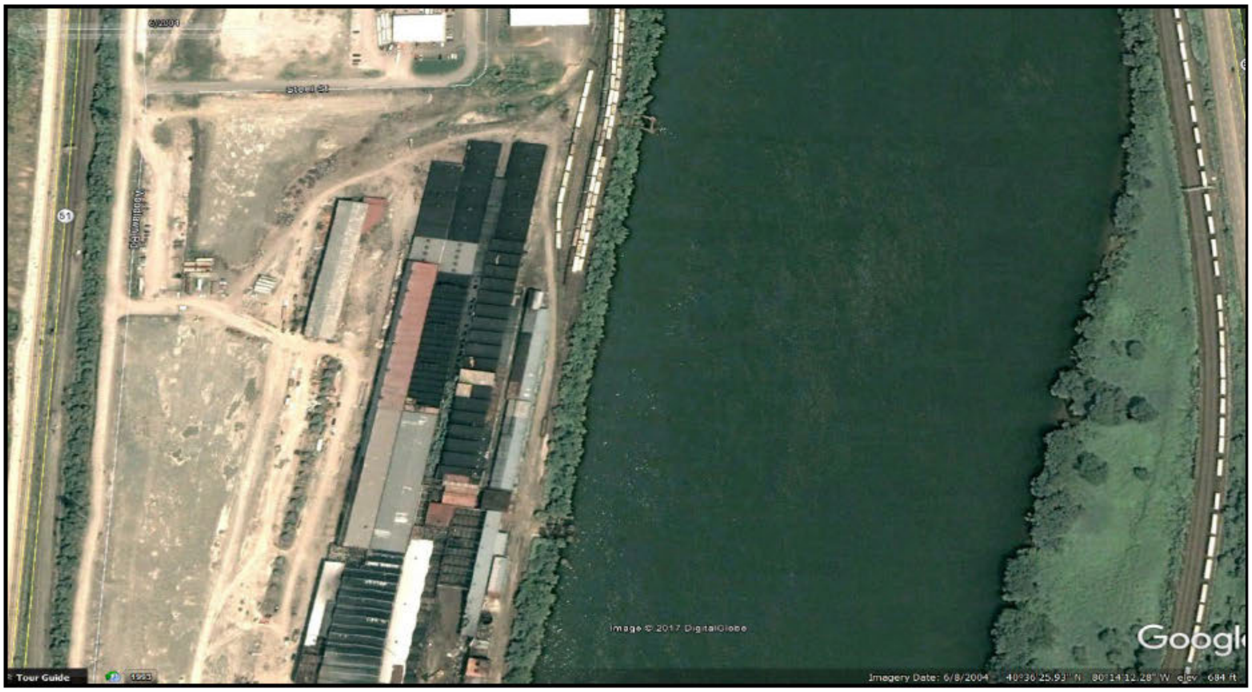
HISTORIC PHOTOGRAPHS

Photolog 1 - Aerial Photograph of the Aliquippa Tin Mill dated 1975. Shows location of aboveground storage tanks at the corner of Woodlawn Rd and Steel St. (Photo taken by EPA from a photo at C.J. Betters office)

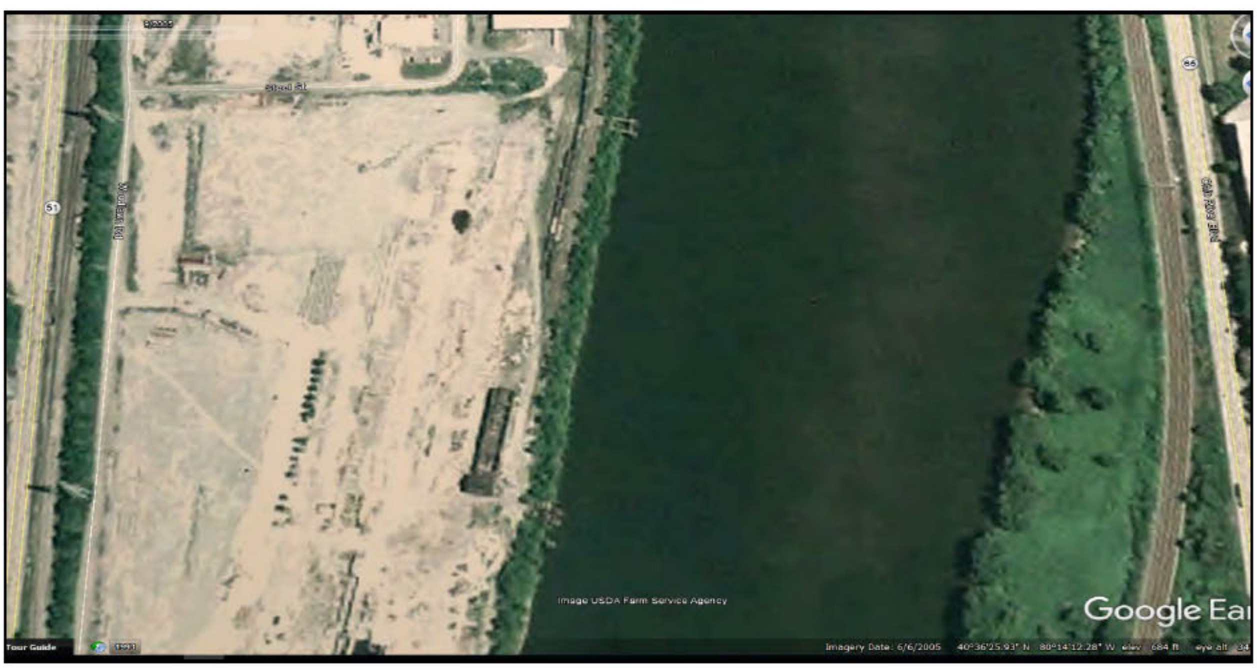


Photolog 2 – Aerial Photograph of the Aliquippa Tin Mill dated 2002. Picture from an on-line article at https://www.timesonline.com/86a90bde-ffbe-11e4-9406-1f5b88851d5d.html

HISTORIC PHOTOGRAPHS



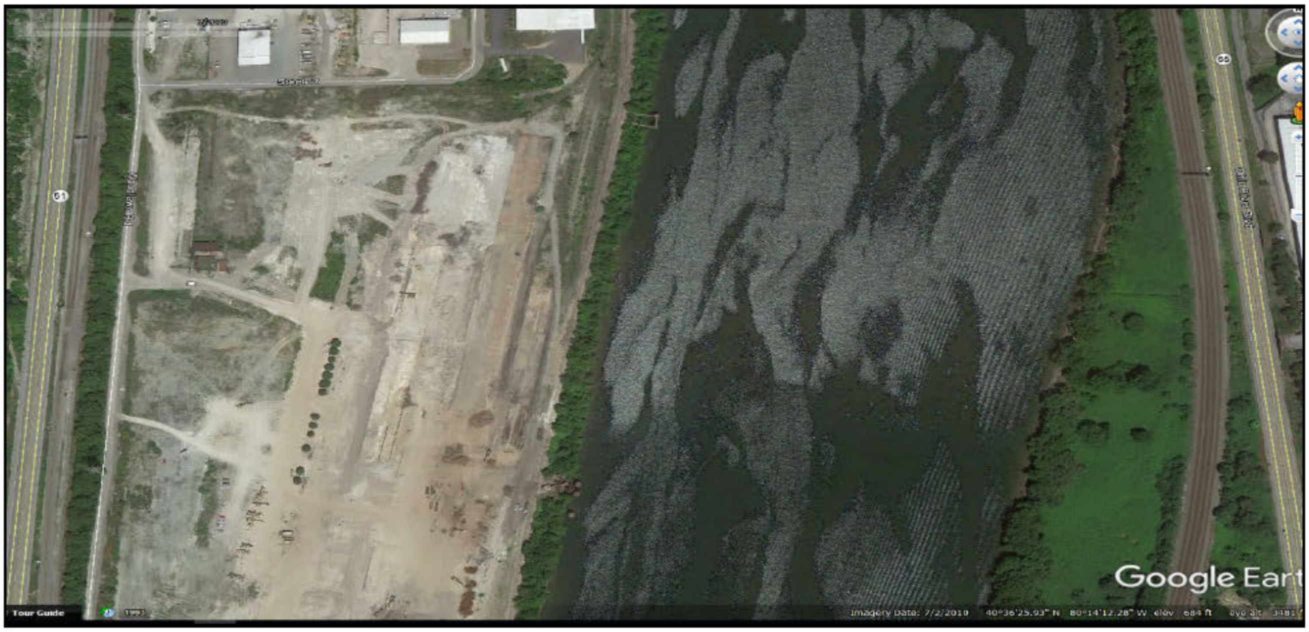
Photolog 3 - Aerial photograph of the Aliquippa Tin Mill in 2004. (Google Earth Pro - historical timeline)



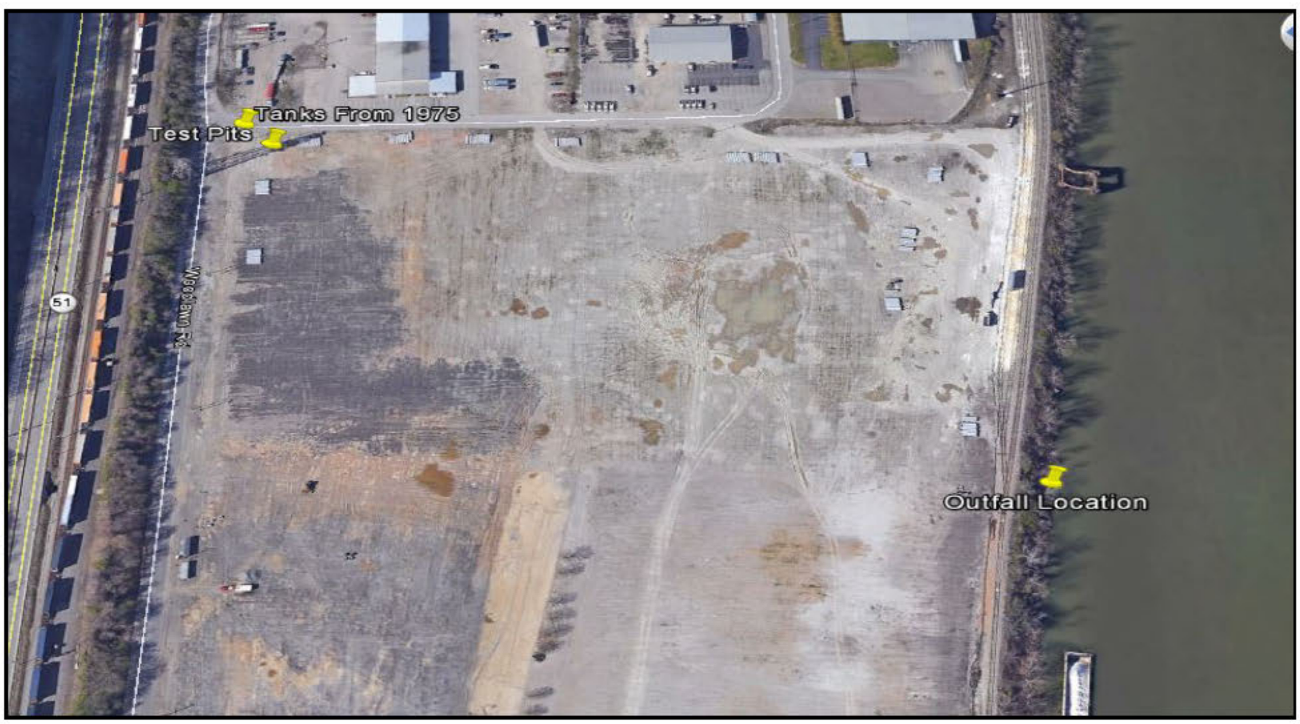
Photolog 4 - Aerial photograph of the Aliquippa Tin Mill in 2005. (Google Earth Pro - historical timeline)

Aliquippa Tin Mill Site
Aliquippa, Beaver County, Pennsylvania
Federal On-Scene Coordinator's Report Photographs

HISTORIC PHOTOGRAPHS



Photolog 5 - Aerial photograph of the Aliquippa Tin Mill in 2010. (Google Earth Pro - historical timeline)



Photolog 6 - Aerial photograph of the Aliquippa Tin Mill in 2016. Most current one loaded onto Google Earth. Locations of outfall, test pits and former aboveground storage tanks. (Google Earth Pro)

Aliquippa Tin Mill Site
Aliquippa, Beaver County, Pennsylvania
Federal On-Scene Coordinator's Report Photographs

TEST PIT PHOTOS

Photolog 7 - Test Pit Excavation on December 8, 2017. Location of sheared piping of 4-in lines (photo provided by C.J. Betters - Photo 4)

Photolog 8 - Test Pit Excavation on December 8, 2017. Sheared 4-in piping with oil and water inside the piping. (photo provided by C.J. Betters - Photo 6)

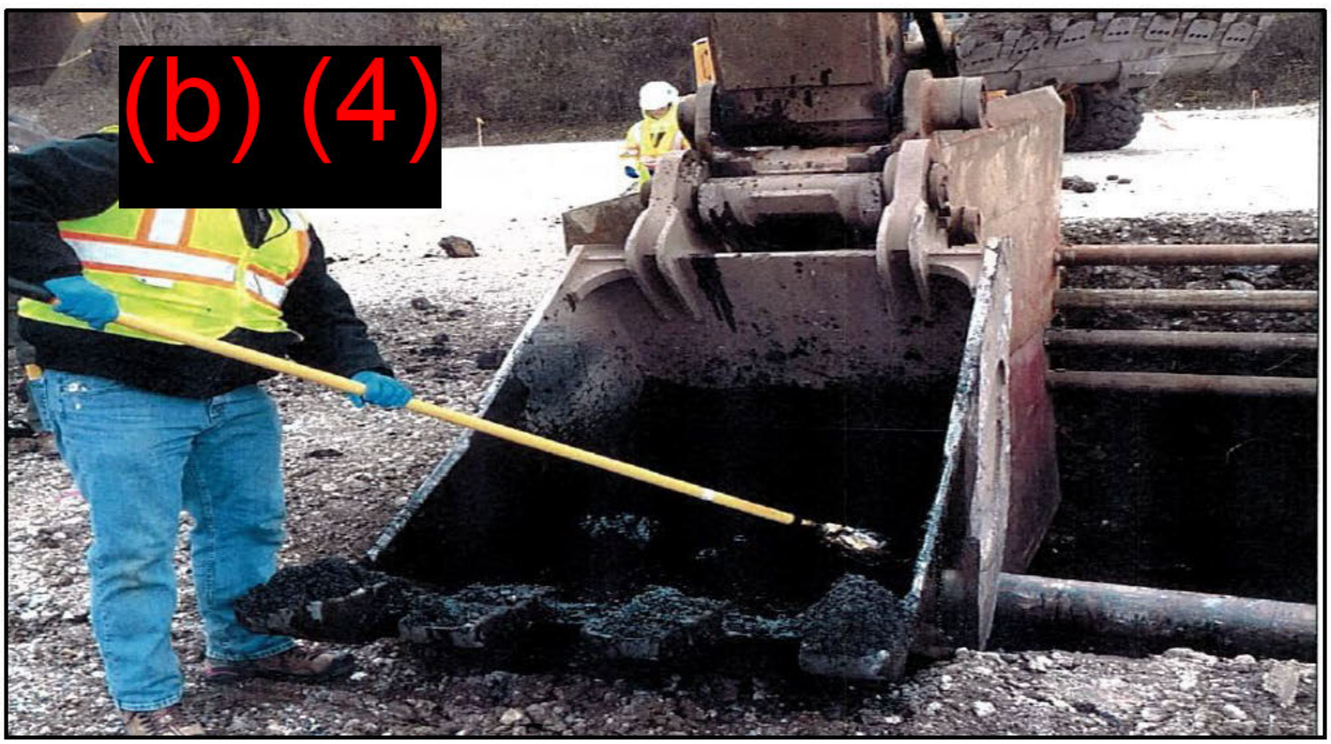
TEST PIT PHOTOS

Photolog 9 - Test Pit Excavation on December 8, 2017. Piping cut back to place temporary plugs. Evidence of contaminated soil underneath the piping (photo provided by C.J. Betters - Photo 10)

Photolog 10 - Test Pit Excavation on December 8, 2017. Excavation down to water table. Contaminated soils and oil on the water. (photo provided by C.J. Betters - Photo 12)

TEST PIT PHOTOS

Photolog 21 - Test Pit Excavation on December 8, 2017. Close up picture of excavation with oil at the water level. (photo provided by C.J. Betters - Photo 13)



Photolog 32 - Test Pit Excavation on December 8, 2017. Contaminated soil inside bucket removed during excavation. (photo provided by C.J. Betters - Photo 14)

BOOMING OPERATIONS

Photolog 13: Transfer of defensive actions to EPA. Conditions on January 31, 2018 (EPA photo: IMG_0030.jpg)

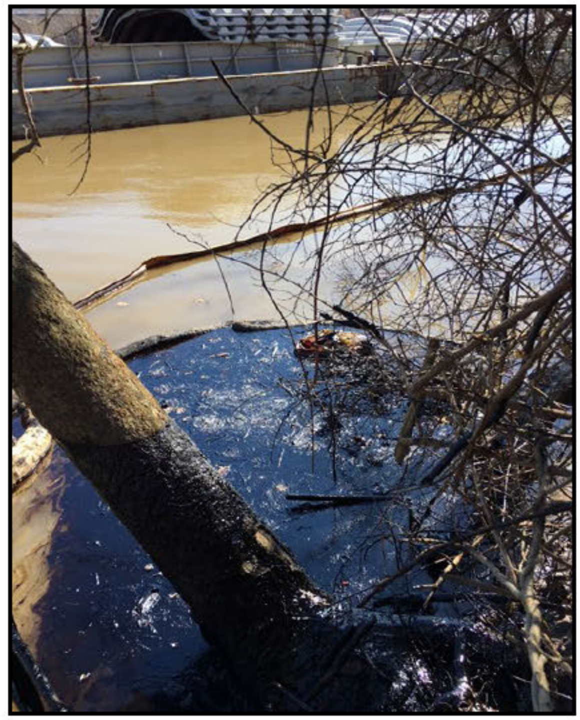
Photolog 14: Transfer of defensive actions to EPA. Conditions on January 31, 2018 (EPA Photo: IMG_0031.jpg)

Photolog 15: High water event – booming conditions. February 20, 2018 (EPA photo: IMG_0042.jpg)

Photolog 16: High water event - booming conditions. February 20, 2018 (EPA photo: IMG_0043.jpg)

BOOMING OPERATIONS

Photolog 17: Condition of oil collection pom-poms on February 22, 2018. (ERRS photo: 3358.jpg)

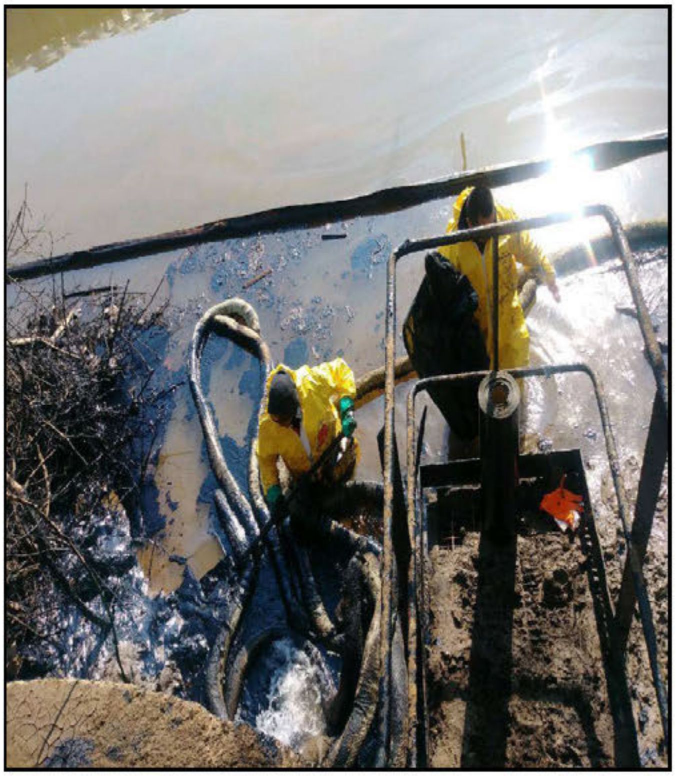


Photolog 18: Outfall conditions on February 27, 2018 (EPA photo: IMG_0052.jpg)

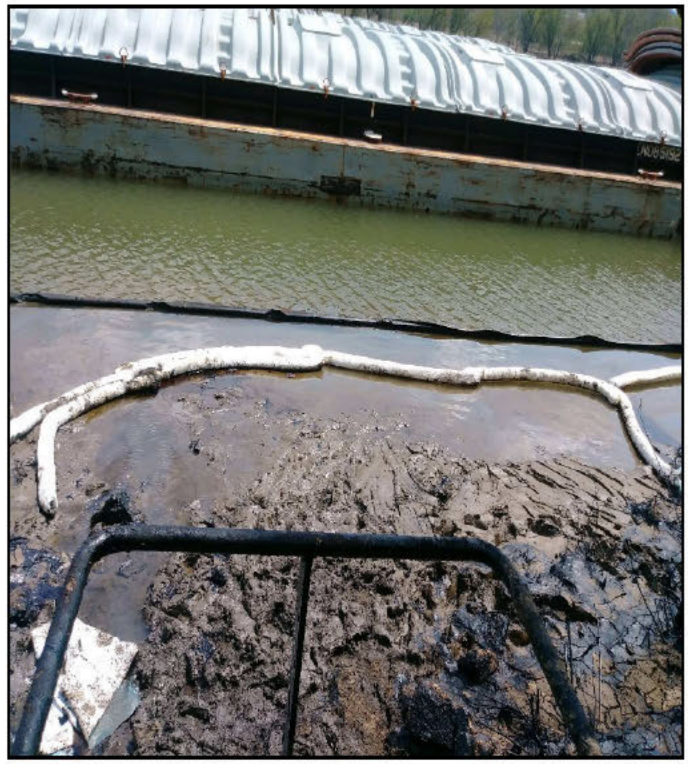
Photolog 19: Cleanup Activities on March 6, 2018 (ERRS photo: 3508.jpg)

Photolog 20: Outfall conditions on April 10, 2018. (ERRS photo: 3930.jpg)

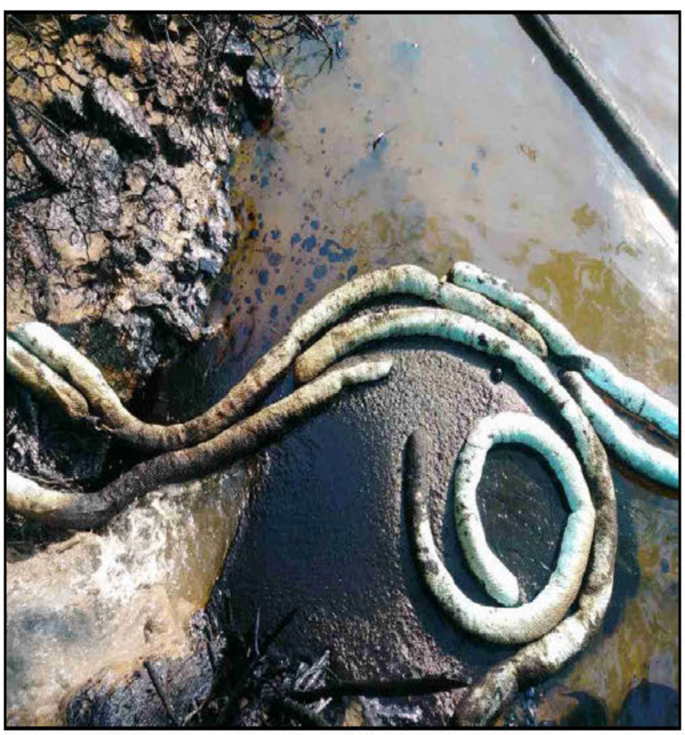
BOOMING OPERATIONS



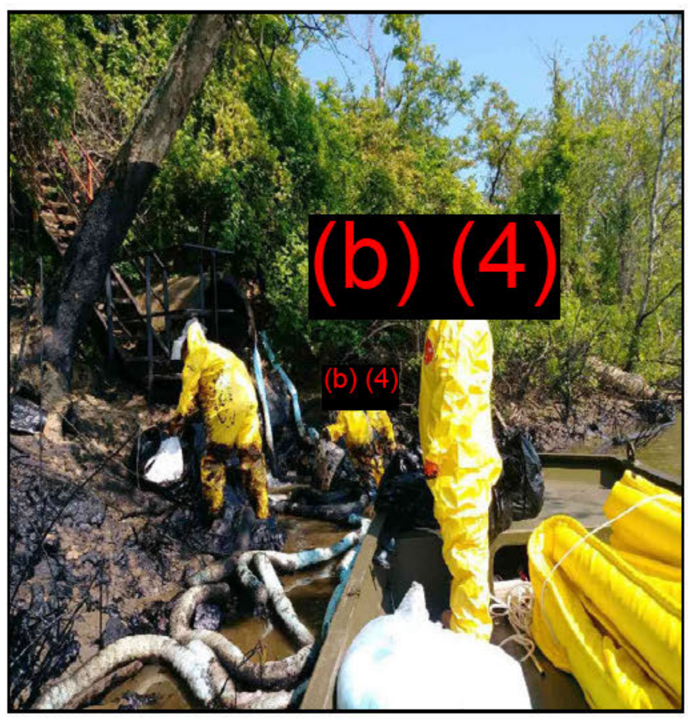
Photolog 21: Cleanup activities on April 10, 2018 (ERRS Photo: 3939.jpg)



Photolog 22: Outfall and riverbank conditions after cleanup activities and booming changeout - low water conditions. May 3, 2018. (ERRS Photo: 4271.jpg)



Photolog 23: Outfall conditions on May 29, 2018. (ERRS photo: 4832.jpg)



Photolog 24: Cleanup activities on May 29, 2018. (ERRS photo: 4839-copy.jpg)

BOOMING OPERATIONS

Photolog 25: Conditions after cleanup activities and boom changeout on May 29, 2018. (ERRS photo: 4845.jpg)

Photolog 26: Booming operations on June 11, 2018. (ERRS photo: 5307.jpg)

Photolog 27: Booming conditions on June 13, 2018. (ERRS photo: 5392.jpg)

Photolog 28: Cleanup operations and boom change-out on June 28, 2018 (ERRS photo: imagejpeg_9.jpg)

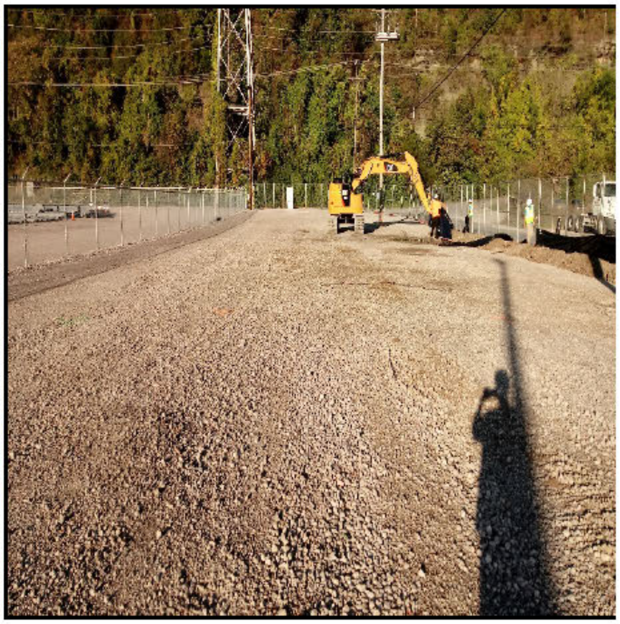
Aliquippa Tin Mill Site
Aliquippa, Beaver County, Pennsylvania
Federal On-Scene Coordinator's Report Photographs

BOOMING OPERATIONS

Photolog 29: Outfall conditions on July 9, 2018. (ERRS photo: imagejpeg_4.jpg)

Photolog 30: Condition of oil pom pom placed at Inlet #14 on April 10, 2018. Discoloration is not from oil. (ERRS photo: 3925.jpg)

Phase 1 Work for the period of October 2018 – February 2019



Photolog 31: Looking west into designated work area with temporary fencing on 10/10/18. (START photo 1010180835)

Photolog 12: Adjacent operations on the south side of the work area on 8/31/18. (EPA photo IMG_0153.jpg)

Photolog 33: Conditions of outfall at the beginning of response actions on 10/10/18. (START 1010180900a)

Photolog 34: Conditions at the outfall at the beginning of response actions on 10/10/18. (START photo 1010180900b)

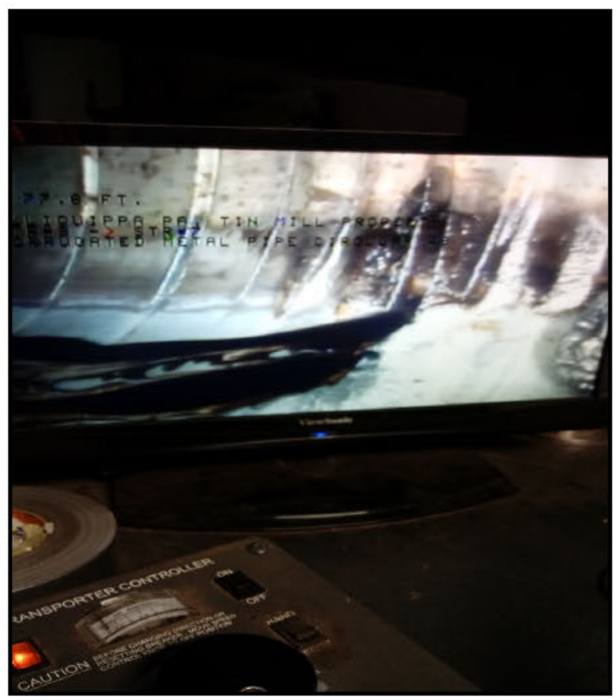
Aliquippa Tin Mill Site
Aliquippa, Beaver County, Pennsylvania
Federal On-Scene Coordinator's Report Photographs

Phase 1 Work for the period of October 2018 – February 2019

Photolog 35: Test pit conducted on the northern side of the work area near Steele Street on 10/10/18. Oil seeps observed. (START photo 1010181312.jgg)

Photolog 36: Test pit conduct on northern side of work area near Steele Street on 10/11/18. (START photo IMG_0823.jpg)

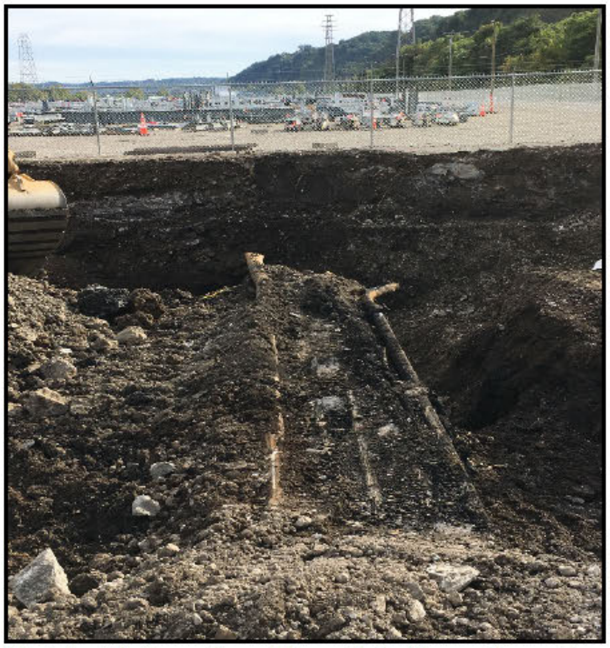
Photolog 37: Subcontractor preparing to conduct camera survey of piping. Camera being lowered into inlet #8. 10/11/18 (START photo IMG_0821.jpg)



Photolog 38 – Picture of camera survey video showing oil infiltrating storm piping at 77.6 ft from inlet on 10/11/18. (START photo 1011180922.jpg

Aliquippa Tin Mill Site
Aliquippa, Beaver County, Pennsylvania
Federal On-Scene Coordinator's Report Photographs

Phase 1 Work for the period of October 2018 – February 2019



Photolog 39: -Excavation of the nestled piping on the north side of the stormwater piping. 10/16/18 (EPA IMG_0195.jpg)

Photolog 40: - Side profile of the nestled piping looking to the east. Oil contamination below piping. Not continuous to 19 feet. 10/15/18. (START photo IMG_1067.jpg

Photolog 41: Excavation of the nestled piping on 10/16/18. (EPA IMG_0189.jpg)

Photolog 42: Excavation below the nestled piping. Piping located in the top right corner of picture. 10/16/18. (START photo-IMG_1070.jpg)

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Photolog 43: Excavation beginning in the area of the stormwater piping – north side on 10/16/18 (START photo IMG_1073.jpg)

Photolog 44: Continued excavation above the stormwater piping – south side on 10/17/18. (START photo IMG_1086.jpg)

Photolog 45: Stockpiling oil-contaminated soils. Limited work area due to power lines. 10/16/18. (START photo IMG_1077.jpg)

Photolog 46: Excavation around storm water piping. Bucket damaged section while clearing soil. 10/17/18. (START photo IMG_1089.jpg)

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Photolog 47: Excavation on the south side of storm water piping. Water table at 19-20 feet. Oil seeps impacting water. 10/18/18. (START photo IMG_1546.jpg)

Photolog 48: - Excavation on the north side of storm water piping. Water table at 19-20 feet. Oil seeps impacting water. 10/18/18. (START photo IMG_1551.jpg)

Photolog 49: - Water mixed with oil inside the storm water piping. 10/19/18. (START photo IMG_1561.jpg)

Photolog 50: - Conditions on north side of the stormwater piping once water table was reached. 10/19/18. (START photo IMG_1568.jpg)

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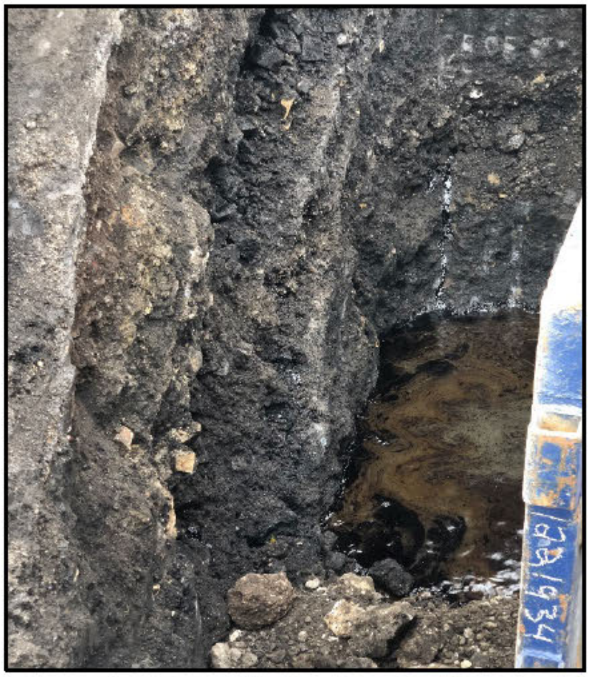
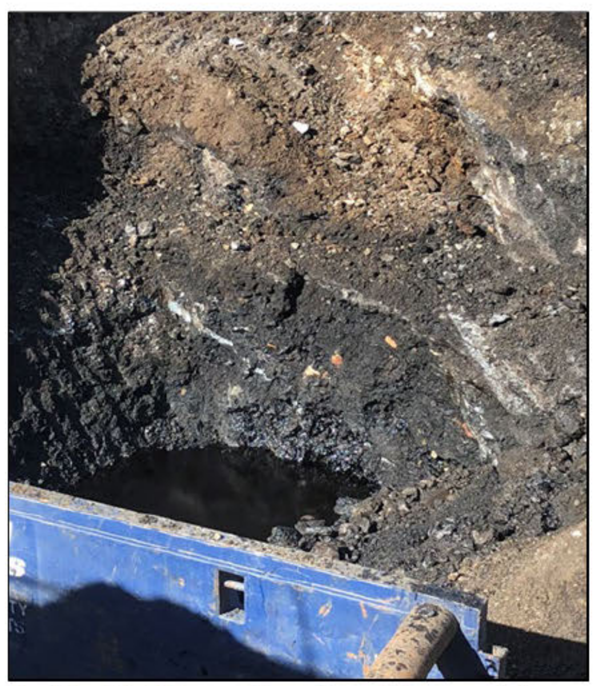


Photolog 51: - Oil from seeps on the sidewall impacting the groundwater. South side of the stormwater piping. 10/19/18. (START photo IMG_1570.jpg)

Photolog 52: - Pocket of oil uncovered while excavating on the north side of the storm water piping. 10/22/18 (START photo IMG_1582.jpg)

Photolog 53: Amount of oil on the water table after 1 minute. 10/22/18 (START photo IMG_1583.jpg)



Photolog 54: - Oil covers the surface of the excavated area after 5 hours. 10/22/18. (START photo IMG_1596.jpg)

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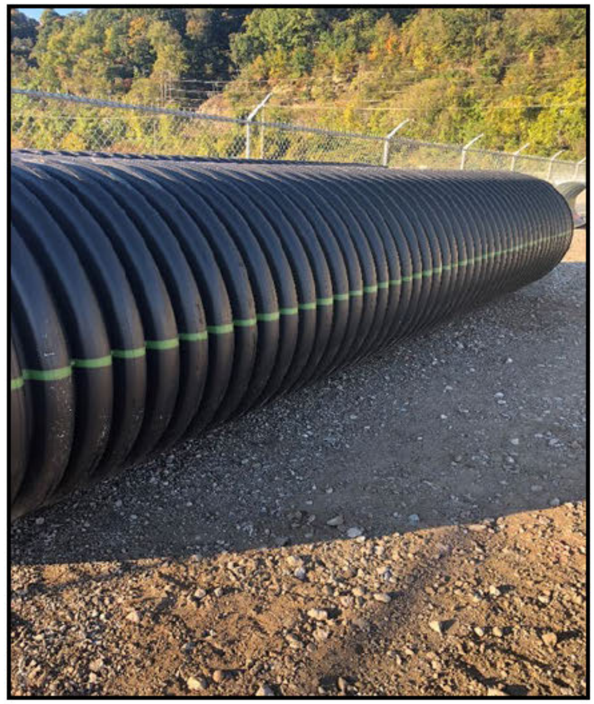
Photolog 55: North side of excavation while making bench for excavator. Pocket of oil and impacted groundwater near bottom of picture. 10/22/18 (START photo IMG_1600.jpg)



Photolog 56: 48-inch HDPE piping to be used to replace metal storm water piping. 10/24/18. (START photo IMG_1637.jpg)

Photolog 57: Excavation of the south side of the storm water piping. Water impacted from oil seeps.10/25/18. (START photo IMG_1637.jpg)

Photolog 58: - Conditions on the north side of the stormwater piping from pocket of oil uncovered during excavation. 10/25/18. (EPA photo IMG_0225.jpg)

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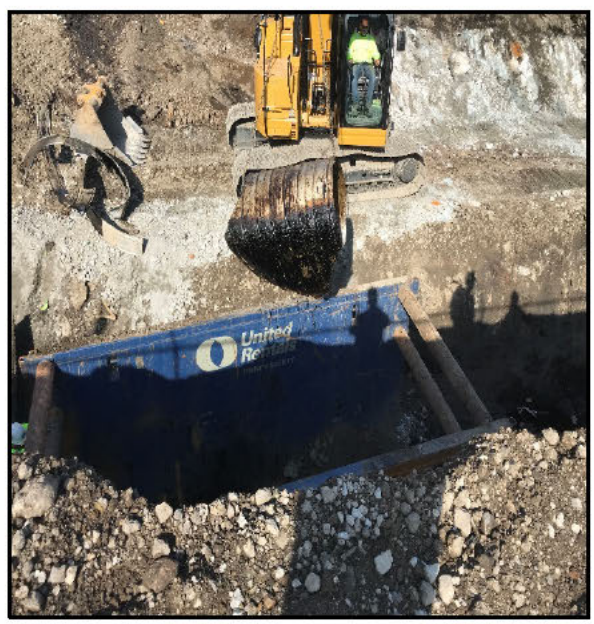
Photolog 59: Conditions on the south side of the storm water piping from oil seeps discovered after excavation. 10/26/18 (EPA photo IMG_0235.jpg)

Photolog 60: ERRS crew using absorbent pads to remove oil from the surface of the water before removing piping. 10/30/18. (START photo IMG_8737.jpg)

Photolog 61: First 20-foot section of metal storm water piping removed. 10/30/18 (START photo IMG_8749.jpg)



Photolog 62: Removing section of storm water piping that included the infiltration point shown on camera. This section was also damaged during excavation operations. 10/30/18. (START photo IMG_8764.jpg)

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Photolog 63: Continuing work on removing metal storm water piping. 10/30/18. (START photo IMG_8775.jpg)

Photolog 64: Continuing work on removing metal storm water piping. 10/30/18. (START photo IMG_8783.jpg)

Photolog 64: Replacement of the first section of storm water piping with HDPE piping. 10/30/18 (START photo IMG_8841.jpg)

Photolog 66: Conditions at the outfall on 10/30/18. Large amount of oil at the base of outfall. Daily removal of oil (START photo IMG_8817.jpg)

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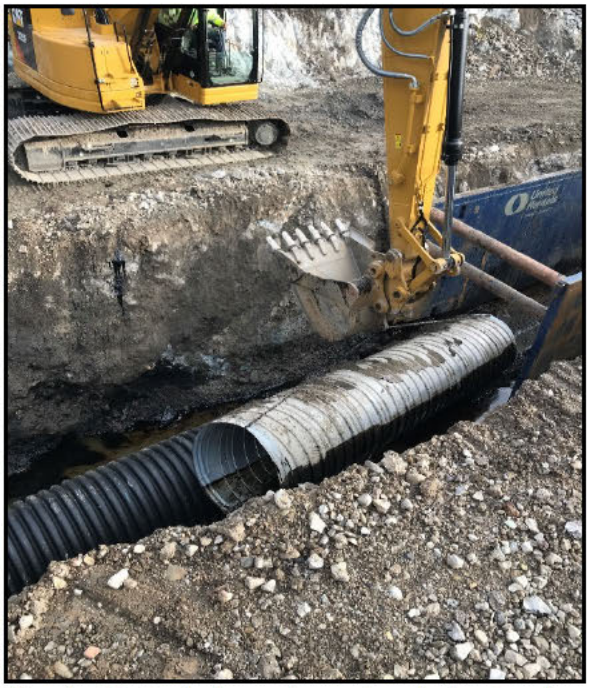

Photolog 67: Continuing work to replace the first 3 sections of stormwater piping. 10/31/18 (START photo IMG_8860.jpg)

Photolog 68: First two sections of HDPE piping installed. Working to level the piping with the required grading. 10/31/18 (START photo IMG_8878.jpg)

Photolog 69: Placing flowable fill around the first 3 sections of piping to eliminate pathway for oil to follow the stormwater piping. 10/31/18 (START photo IMG_8932.jpg)

Photolog 70: Flowable fill caused piping to lift and open at joints. 10/31/18 (START photo IMG_8966.jpg)

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Photolog 71: Removed HDPE piping and cleaning out fill material in order to relay piping. 11/1/18 (START photo IMG_8976.jpg)

Photolog 72: Fill material sealed off the bottom of the channel with cement. 11/1/18 - (START photo IMG_8986.jpg)

Photolog 73: Cleaned out channel in preparation for new piping. 11/2/18 (START photo IMG_8992.jpg)

Photolog 74: First section of HDPE piping replaced. Joint where the section is attached to the existing metal piping. 11/2/18 (START photo IMG_9006.jpg)

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Photolog 75: The first 3 sections (60 ft) replaced. Ready to be covered with flowable cement. 11/2/18. (START photo IMG_9009.jpg)

Photolog 76: Close-up of bell and spigot joint on the HDPE piping. 11/2/18 (START photo IMG_9018.jpg)

Photolog 77: Placing flowable cement on the HDPE piping. 11/5/18 (START photo IMG_1892.jpg)

Photolog 78: 3 sections (60 ft) fully covered with the flowable cement. 11/5/18. (START photo IMG_1898.jpg)

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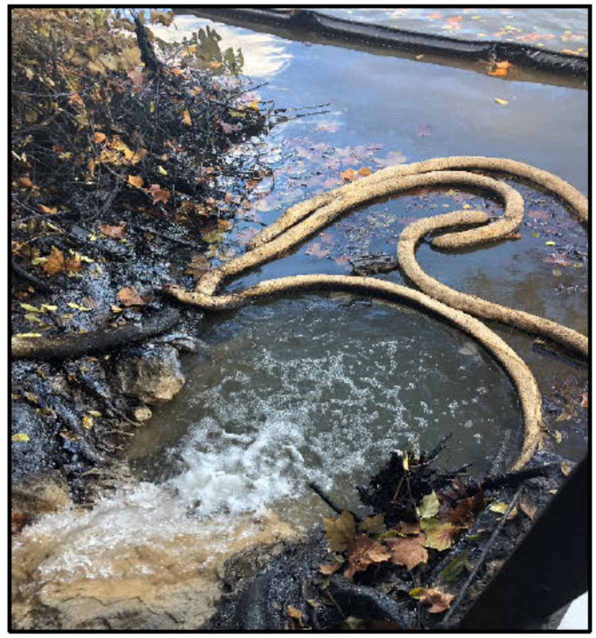
Photolog 79: Conditions at outfall after new HDPE piping and placement of flowable cement. No visible oil being discharged. 11/6/18 (START photo IMG_1906.jpg)



Photolog 80: Conditions at outfall after new HDPE piping and placement of flowable cement. No visible oil being discharged. 11/6/18(START photo IMG_1908.jpg)

Photolog 81: Begin excavation of the next 2 sections of storm water piping. Less oil observed seeping into groundwater. 11/7/18 - (START photo IMG_1929.jpg)

Photolog 82: Begin excavation of the next 2 sections of storm water piping. Less oil observed seeping into groundwater. 11/7/18 (START photo IMG_1934.jpg)

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Photolog 83: Begin to backfill after placing new sections of piping. 11/13/18. (START photo IMG_1106.jpg)

Photolog 84: Continuing to remove existing piping sections and cleaning trench in preparation of new piping. 11/13/18. (EPA photo IMG_0317.jpg)

Photolog 85: Conditions at outfall. No visible oil being discharged. 11/14/18. (START photo IMG_1114.jpg)

Photolog 86: Conditions at outfall. Sheening observed inside boom. 11/14/18. (START photo IMG_1116.jpg)

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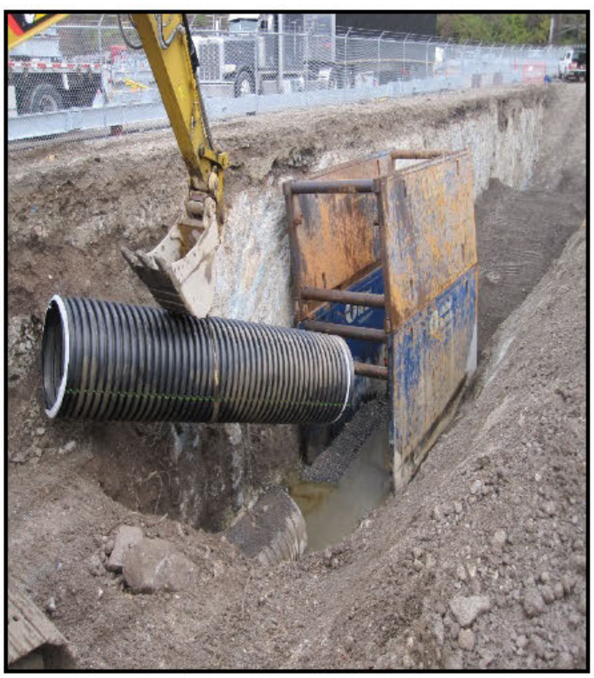
Photolog 87: Step 1 of replacement of piping. Remove metal piping and prepare base material. 11/20/18. (START photo IMG_1148.jpg)

Photolog 88: Step 2 of replacement of piping. Using excavator to lower HDPE piping into the trench 11/20/18 (START photo IMG_1151.jpg)



Photolog 89: Step 3 of replacement of piping. Using excavator to lower HDPE piping into the trench. 11/20/18. (START photo IMG_1152.jpg)

Photolog 90: - Step 4 of replacement of piping. Connect piping, level and grade inside the trench box. 11/20/18. (START photo IMG_1154.jpg)

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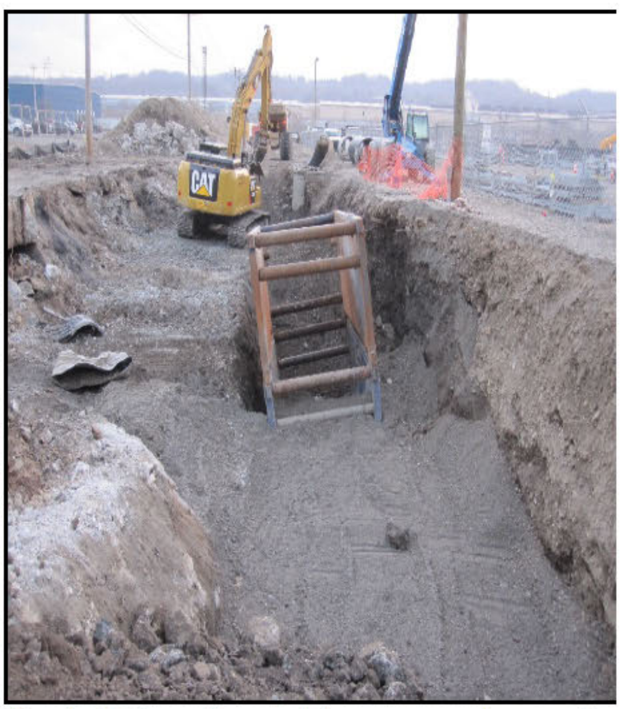
Photolog 91: Begin work on the last 80 feet of replacement piping. Side wall conditions changed. Fill material vs. slag. Need to create step on north side of trenching. 12/3/18. (START photo IMG_11.74.jpg)

Photolog 92: Building foundation encountered while excavating material to create step down area for excavator. Required a hammer ram to breakdown area. 12/6/18. (START photo IMG_1191.jpg)



Photolog 93: Excavating material to create step down area for excavator. 12/13/18. (START photo IMG_1232.jpg)

Photolog 94: Working close to a utility pole. Pole secured by a lift in case we lost the pole. Side wall slipped and lost electricity although pole remained upright. 12/13/18 (START photo IMG_1235.jpg

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Photolog 95: - Photos taken from river to document conditions at outfall and riverbank. Facing west. 12/6/18 (START photo IMG_1201.jpg)

Photolog 96: - Photos taken from river to document riverbank conditions on the southern side of the outfall. Facing west. 12/6/18. (START photo IMG_1200.jpg)

Photolog 97: Photos taken from river to document riverbank conditions on the northern side of the outfall. Facing west. 12/6/18. (START photo IMG_1196.jpg)

Photolog 98: Photos taken from river to document riverbank conditions on the northern side of the outfall. Facing west. 12/6/18. (START photo IMG_1197.jpg)

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Photolog 99: Connector provided by the HDPE manufacturer to connect piping when bell/spigot connector not available. 12/3/18. (EPA photo IMG_0344.jpg)

Photolog 100: Connection of HDPE piping to metal storm water piping at 300 ft approaching inlet #7. 12/19/18. (EPA photo IMG_0414.jpg)

Photolog 101: Final compacting and grading of work area to restore to original conditions. 2/5/19. (EPA photo IMG_0434.jpg)

Photolog 102: Final conditions at the work area bordering Woodlawn Road and Steel Street. Facing east. 2/5/19. (EPA photo IMG_0436.jpg)

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Photolog 103: Subcontractor on-site to cleanout storm water piping from Inlet #7 through Inlet #2. 12/3/18. (START photo IMG_1176.jpg)

Photolog 104: Photo of piping conditions after cleaning at Inlet #4. Material is cement and cannot be removed. 12/3/18. Photo extracted from camera survey video.

Photolog 105: Photo of storm water piping conditions before cleaning. Photo extracted from camera survey video. 10/10/18

Photolog 106: Photo of storm water piping conditions after cleaning. Photo extracted from camera survey video. 2/3/18

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Photolog 107: Facing N. Wooden stakes placed every 10 feet11rth of the outfall. 9/17/19. (START photo IMG_0936)

Photolog 108: Facing Down. Rock and material showing dark oil stains. 09/19/19. (START photo IMG_0336)

Photolog 109: Facing Down. Small ditch left by bootprint, showing water with a silvery sheen of oil. 09/19/19. (START photo IMG_0335)

Photolog 110. Facing S/SE. Pile of rocks and material with dark oil staining to be disposed. 09/19/19. (START photo IMG_0339)

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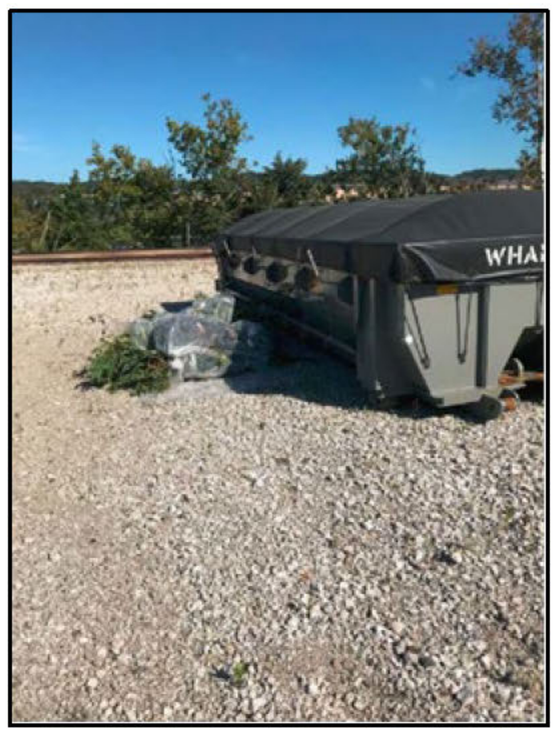
Photolog 111: Facing SW. Vegetation being removed south of outfall. 09/19/19. (START photo IMG_0945)

Photolog 112: Facing South. Harbor boom placed in river. 09/19/19. (START photo IMG_0947)

Photolog 113: Facing Down. Oil and rainbow sheen released when removing large rocks in front of outfall. 09/19/19. (START photo IMG_0949)



Photolog 114: Facing East. Bags of vegetation removed from along river bank, disposed of in roll-off container (pictured). 09/19/19. (START photo IMG_0342)

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Photolog 115: Facing Down. Stairs leading down to riverbank and outfall. 09/20/19. (START photo IMG_0953)

Photolog 116: Facing S. Wooden stakes south of outfall. Water level rose approximately 3-4 inches. 09/20/19. (START photo IMG_0955)

Photolog 117: Facing SE. ERRS agitating sediment at 240'-260' interval. 09/20/19. (START photo IMG_0958)

Photolog 118: Facing Down. Oil stained material from 240' - 260' interval. 09/20/19. (START photo IMG_0347)

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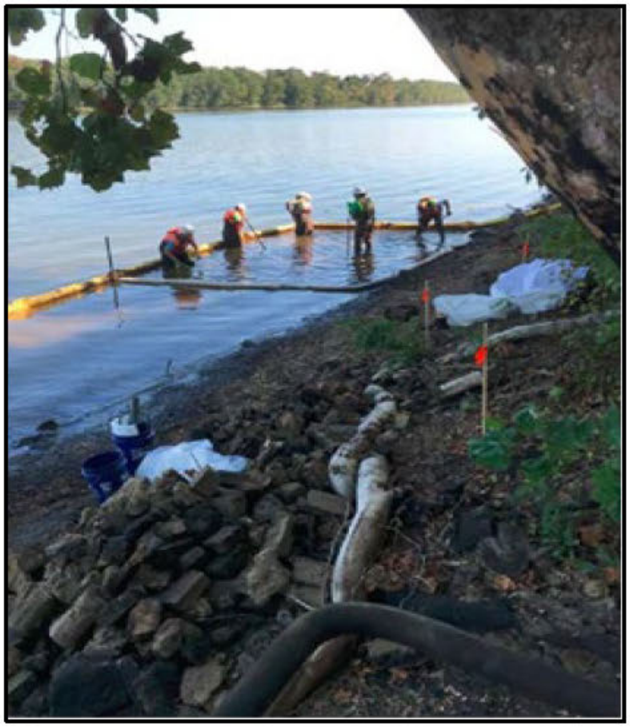

Photolog 119: Facing S/SE. ERRS agitating sediment within 240' - 260' interval. 09/20/19. (START photo IMG_0350)

Photolog 120: Facing S. Rainbow sheen observed on surface at 240'-260' after agitation. 09/20/19. (START photo IMG_0964)

Photolog 121: Facing Down. Agitation releasing oil and rainbow sheen from sediments at 340'-360' interval. 9/23/19. (START photo IMG_0966)

Photolog 122: Facing S. Oil stained rocks and bricks placed on bank from 340'-360' interval. 9/23/19. (START photo IMG_0971)

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Photolog 123: Facing Down. Oil stained rocks and bricks removed from 320'-340' interval. 9/24/19. (START photo IMG_0992).

Photolog 124: Facing S. ERRS connected absorbent boom to harbor boom to have boom spanning from 0'-360'. 9/24/19. (START photo IMG_0993).

Photolog 125: Facing S/SE. Triangular arrangement of absorbent boom between 260' - 360' interval. 09/25/19. (START photo IMG_0352).

Photolog 126: Facing N/NE. New orientation of harbor boom coming into contact with shore at 0' marker. 09/25/19. (START photo IMG_0354).

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Photolog 127: Facing East. Pig mats lining river bank. 09/25/19. (START photo IMG_0358).

Photolog 128: Facing Down. Silver sheen on water around 280' marker. 09/26/19. (START photo IMG_0361).

Photolog 129: Facing Down. Buckets used for transport of rock and sediment to Super Sacks. 09/27/19. (START photo IMG_0366)

Photolog 130: Facing SW. Super Sacks used for rock and sediment disposal. 09/27/19. (START photo IMG_0368)

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Photolog 130: Facing S/SW. ERRS digging trench along the 280' - 300' interval. 09/30/19. (START photo IMG_0370)

Photolog 131: Facing S/SW. Rocks and sediment piled up from digging the trench. 09/30/19. (START photo IMG_0371)

Photolog 132: Facing S/SE. Two filled Super Sacks and a third, partially full Super Sack. 09/30/19. (START photo IMG_0373)

Photolog 133: Facing E. 5' x 10' Myclex Versamat laid out in the water and secured at the 260' mark. 09/30/19. (START photo IMG_0374)

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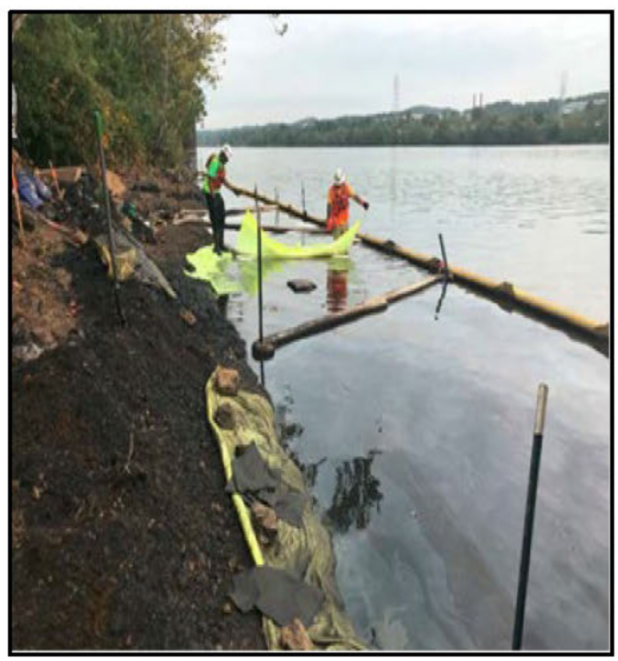
Photolog 134: Facing Down. Visible dark spots of oil in water around the 240' marker. Dark spots due to dredging of sediment to form trench. 10/01/19. (START photo IMG_0382)

Photolog 135: Facing S/SE. Mound of dark/stained sediment dredged from below water's surface around the 240' marker. 10/01/19. (START photo IMG_0384)

Photolog 136: Facing South. Results of Versmats used at interval 230'-240'. 10/02/19. (START photo IMG_1001)



Photolog 137: Facing NE. ERRS laying out new Versmats and skimming the surface of the water to collect rainbow sheen. 10/02/19. (START photo IMG_1002)

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Photolog 138: Facing Down. Additional absorbent pads placed at 110' marker and observed picking up heavier oil. 10/02/19. (START photo IMG_1005)

Photolog 139: Facing Down. Oil stained rocks and bricks removed from 30'-60' interval. 10/02/19. (START photo IMG_1007)

Photolog 140: Facing Down. Oil saturated sediment removed from 30'-60' interval. 10/02/19. (START photo IMG_1009)

Photolog 141: Facing South. Sediment removed from 225'-300' and staged for vacuum truck. 10/02/19. (START photo IMG_1013)

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Photolog 142: Facing North. Sediment removed from 30'-60' interval and staged for vacuum truck. 10/03/19. (START photo IMG_1014)

Photolog 143: Facing North. Stained rocks and bricks staged on bank near outfall at 210'-230' interval. 10/04/19. (START photo IMG_1019)

Photolog 144: Vacuum Truck being utilized to remove excavated sediments from the riverbank. 10/7/19. (EPA photo IMG_0611)

Photolog 145: Small amount of sediments removed using the Vacuum Truck. Sediments too wet and clogged hoses. 10/7/19. (EPA photo IMG_0613.jpg)

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Photolog 146: Facing S/SE. View of riverbank where sediment was dredged and removed. 10/10/19. (START photo IMG_0385)

Photolog 147: Facing S/SE. Five Super Sacks that are filled with soil. Four are full and one is approximately 25% full. 10/10/19. (START photo IMG_0392)

Photolog 148: Facing West. View of area where the riverbank was dug out and removed. Black oil staining visible on surface. 10/10/19. (START photo IMG_0391)

Photolog 149: Facing West. Amount of drainage water flowing from outfall morning of 10/17/19. (START photo IMG_1025)

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Photolog 150: Facing West. ERRS personnel scraping off tar-like material from stairway. 10/17/19. (START photo IMG_1026)

Photolog 151: Facing Down. Large amount of rainbow sheen located on water between outfall and 190' marker. 10/17/19. (START photo IMG_1030)

Photolog 152: Facing North. ERRS removing sediment/soil below staged Super Sacks at 190' marker. 10/17/19. (START photo IMG_1027)

Photolog 153: Facing Down. Staged sediment/soil and stained rock material between 170'-200' interval. 10/17/19. (START photo IMG_1029)

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Photolog154: Facing Down. Large amount of brown oil that was released when removing sediment just north of the outfall at 200' marker. 10/17/19. (START photo IMG_1032)

Photolog 155: Cleanup operations in front of the outfall. 10/23/19. (EPA photo IMG_0647)

Photolog 156: Oil being removed while working in front of the outfall. 10/23/19. (EPA photo IMG_0637)

Photolog 157: Cleanup operations in front of the outfall. Oil being removed with the loose gravel. 10/23/19. (EPA photo IMG_0640)

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Photolog 158: ERRS crew moving riprap through a chute to the riverbank. Lull being used to move the rock. 11/13/19. (EPA photo IMG_0658)

Photolog 159: Cleanup operations complete at outfall. Placement of riprap. Stairs and handrail have also been cleaned. 11/13/19. (EPA photo IMG_0471.jpg)

Photolog 160: Cleanup operations complete on the north side of the outfall. Placement of riprap. 11/13/19. (EPA photo IMG_0467.jpg)

Photolog 161: Cleanup operations complete on the north side of the outfall. Placement of riprap 11/13/19. (EPA photo IMG_0469.jpg)

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Photolog 162: Facing North. Final site conditions after cleanup operations. 100 ft of containment boom to remain until June 30, 2020. 11/13/19 (EPA photo IMG_0473.jpg)

Photolog 163: Looking north from the outfall. Final site conditions. 100 ft of containment boom to remain until June 30, 2020. 11/13/19. (EPA photo IMG_0480.jpg)

Photolog 164: Site conditions of outfall. No oil or sheen coming from the outfall. 11/1/19. (EPA photo IMG_0659.jpg)

Photolog 165: Staging area on the south side of the outfall after Supersacks removed. 11/13/19. (EPA photo IMG_0476.jpg)

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Photolog 166: Crane brought on-site to remove Supersacks from the riverbank to the roll-offs staged at top of the steps. 11/13/19. (EPA photo IMG_0465.jpg)

Photolog 167: Layout of crane operations. Crane, roll-off boxes and lull. 11/13/19. (EPA photo IMG_0666.jpg)

Photolog 168: Crane moving Supersacks from the riverbank to the roll-offs. Supersacks weighed approx. 1500 lbs each. 11/13/19. (EPA photo IMG_0674.jpg)

Photolog 169: Crane dropping off Supersack at the roll-off to then be loaded by the lull. 11/13/19. (EPA photo IMG_0676.jpg)

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Photolog 170: Closer picture of crane dropping off Supersack at the roll-off to then be loaded by the lull. 11/13/19. (EPA photo IMG_0681.jpg

Photolog 171: Supersacks loaded into the roll-off for disposal at landfill. 11/13/19. (EPA photo IMG_0667.jpg)

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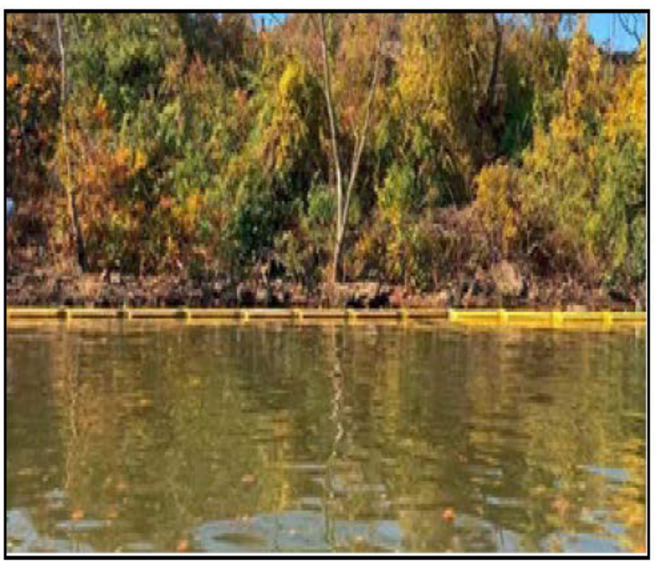
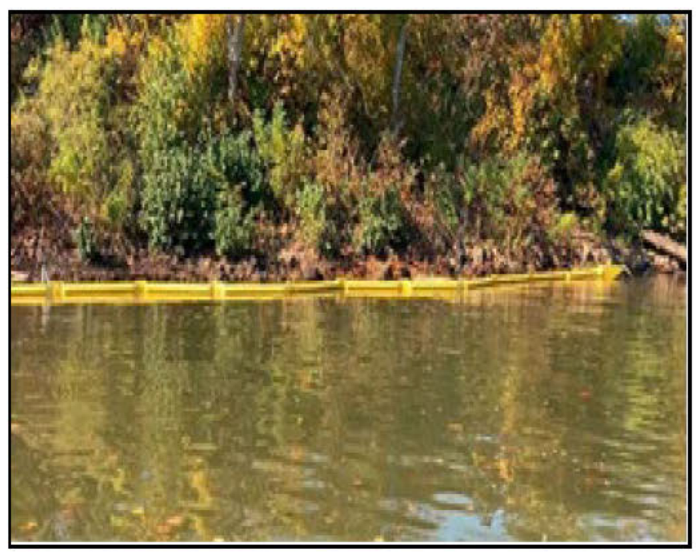
Photolog 172: Facing West. South end of removal area, between markers 290'-360', prior to placing rip-rap material on bank. 10/28/19. (START photo IMG_004.jpg)

Photolog 173: Facing West. Removal area between markers 180'-290' prior to placing rip- rap material on bank. 10/28/19. (START photo IMG_0046.jpg)



Photolog 174: Facing West. Removal area between markers 80'-170' prior to placing rip-rap material on bank. 10/28/19. (START photo IMG_0048.jpg)



Photolog 175: Facing West. Removal area between markers 0'-80' prior to placing rip-rap material on bank. 10/28/19. (START photo IMG_0049.jpg)

Aliquippa Tin Mill Site
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Phase 2 Work for the period of September 2019 – November 2019

Photolog 176: Facing West. Removal area after completion. South side of oufall. 11/22/19 (START photo IMG_1104.jpg)

Photolog 177: Facing West. Removal area after completion. North side of outfall. 11/22/19 (START photo IMG_1105.jpg)

Photolog 178: Facing West. Removal area after completion. North side of outfall 11/22/19 (START photo IMG_1106.jpg)

Photolog 179: Facing West. Removal area after completion. 11/22/19 (START photo IMG_1107.jpg)

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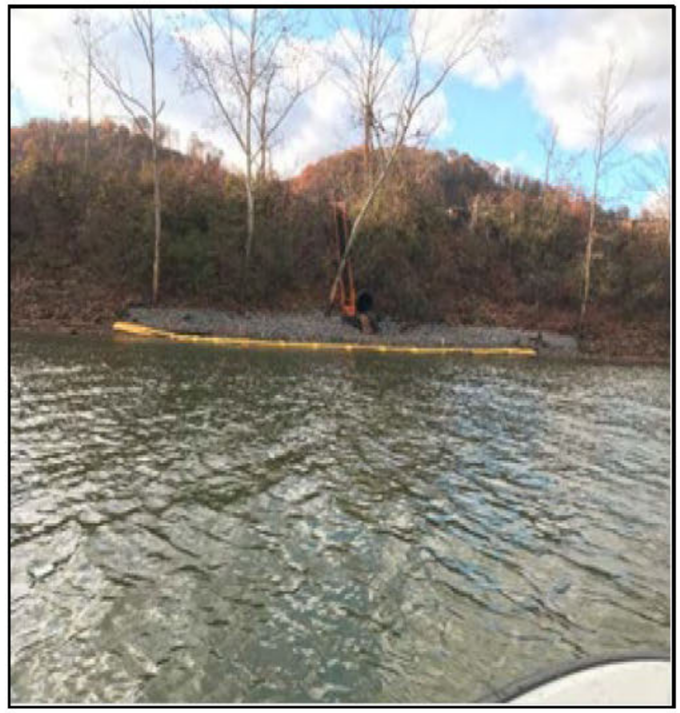
Aliquippa, Beaver County, Pennsylvania
Federal On-Scene Coordinator's Report Photographs

Phase 2 Work for the period of September 2019 – November 2019

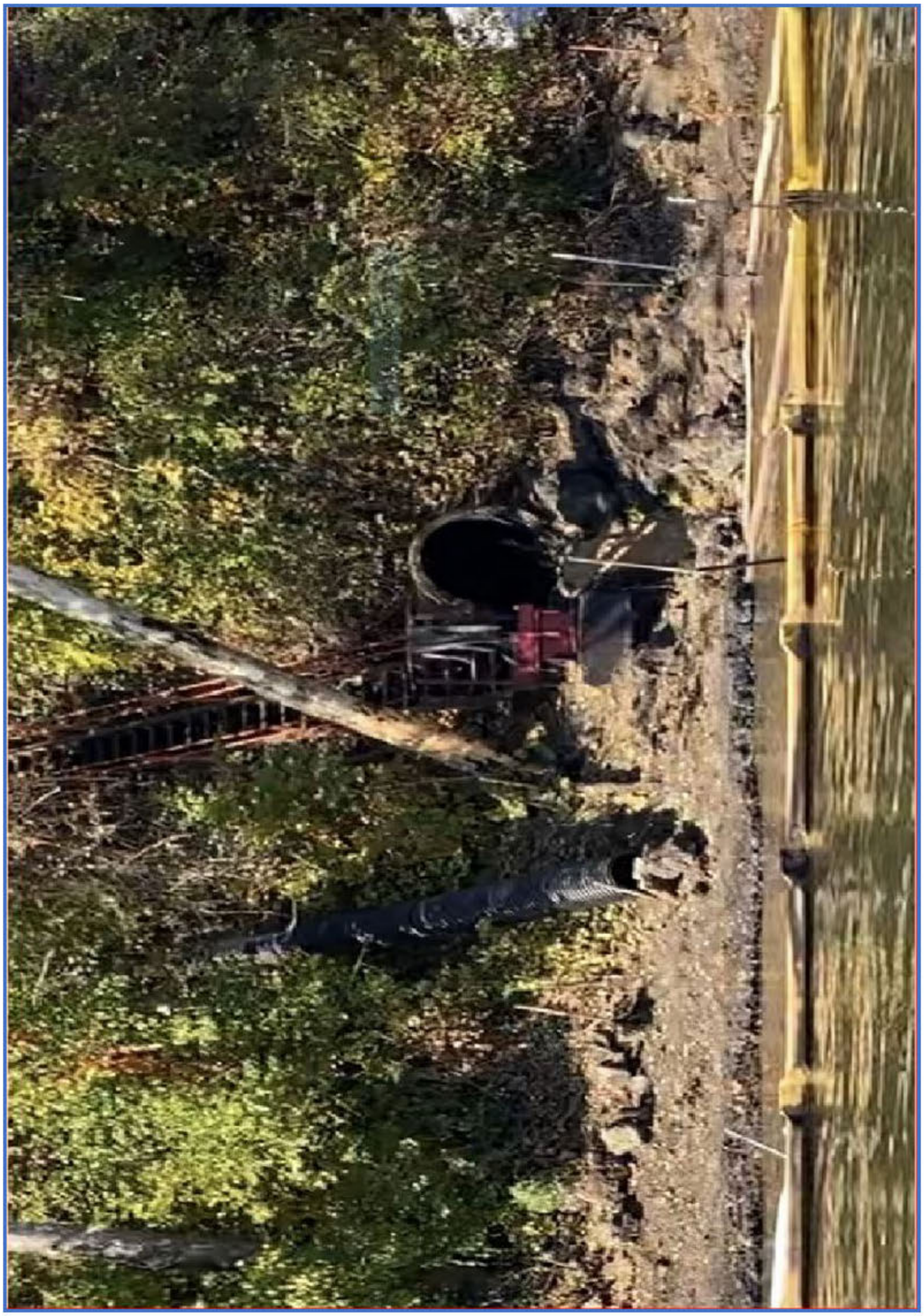
Photolog 180: Facing West. Removal area after completion. 11/22/19 (START photo IMG_1108.jpg)



Photolog 180: Facing West. Removal area after completion. 100 feet of containment boom. 11/22/19 (START photo IMG_0013.jpg)

Photolog 182: Facing West. Removal area after completion. 11/22/19 (START photo IMG_1109.jpg)

Photolog 183: Condition of outfall and riverbank after Phase 1 response actions - replacing storm water piping to mitigate oil discharge. 12/6/2018. (START photo IMG_1206.jpg)



Photolog 184: Condition of outfall and riverbank after Phase 2 response actions – removal of impacted sediments and debris. Picture taken before placement of rip rap.   10/28/19. (START photo outfall zoom.jpg or IMG_0046.jpg)

Aliquippa Tin Mill Site
Aliquippa, Beaver County, Pennsylvania
Federal On-Scene Coordinator's Report Photographs

Photolog 185: Final Condition of outfall and riverbank after Phase 2 response actions including placement of riprap. Containment boom remained in placed until June 2020. 11/25/19. (START photo IMG_0013.jpg)